

NONACTINIDE ISOTOPES AND SEALED SOURCES MANAGEMENT GROUP



NUCLEAR MATERIALS FOCUS AREA



Joint NISSMG and NMFA Small Sites Needs Workshop

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3 Li	4 Be															9 F	10 Ne
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11 Na	12 Mg															35 Br	36 Kr
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
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90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr				

Hydrogen

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- Nonactinide Isotopes and Sealed Sources Management Group
- Waste Elimination Team
- Off-site Source Recovery Project
- Classified TRU Sanitization and HEU Cleaning
- National Transportation Program
- Environmental Management Science Program
- Office of Isotopes for Medicine and Science

EXECUTIVE SUMMARY

The NISSMG/NMFA Small Sites Workshop #1 was conducted on September 11th and 12th, 2001 in Las Vegas, Nevada. The workshop objective was to assist smaller DOE Sites with nuclear materials issues by sponsoring a forum where sites could be exposed to a broad range of service providers within the DOE complex. The workshop was sponsored by the Nuclear Materials Focus Area and the EM Nuclear Materials Stewardship groups from the Albuquerque DOE Operations Office. Small Sites with accountable amounts of nuclear materials were expressly invited to attend, yet others with needs were also welcome to participate (see Announcements and Invitations). In all, 47 sites were invited to participate.

Forty-eight participants were in attendance including those representing 19 small sites, 8 service providers, various DOE offices and workshop organizers. Small Sites were presented with information from service providers, groups from throughout DOE, which are organized to remediate nuclear materials and waste issues (see Workshop Agenda). Sites were asked to articulate their nuclear materials and waste issues. Those in attendance were:

- * Boeing
- * Fernald
- * Bechtel Nevada
- * Los Alamos National Laboratory
- * GE Nuclear Energy
- * DOE - Environmental Measurements Laboratory
- * Sandia National Laboratories– Livermore
- * Idaho National Engineering and Environmental Laboratory
- * Lawrence Livermore National Laboratory
- * East Tennessee Technology Project
- * Lawrence Berkeley Laboratory
- * WASTREN, Inc.
- * Argonne National Laboratory – East
- * Brookhaven National Lab
- * Jefferson Laboratory
- * Sandia National Laboratories – Albuquerque
- * Stanford Linear Accelerator Center
- * Portsmouth
- * Oak Ridge National Laboratory

Sites were then given the opportunity to share their needs with the group and service providers were allowed to share their capabilities and example projects. Service providers also shared the ways they could help small sites with their issues. Those service providers in attendance were:

- * Nuclear Materials Focus Area
- * Nonactinide Isotope and Sealed Source Management Group
- * Waste Elimination Team
- * Off-site Recovery Project
- * Part Declassification
- * HEU Decontamination
- * National Transportation Program
- * INEEL National Transportation and Packaging Program

Time was provided for break-out groups where Sites with needs were allowed time to formulate more solid relationships with service providers and register their needs with the workshop coordination group. Coordination group members were assigned to each break-out group to focus and document discussions which provided additional clarity for aligning needs with providers post meeting. In all, the needs discussed were spread to all of the providers and all sites in attendance had productive discussions with providers. Several sites were given guidance that allowed for the establishment of a path forward that did not exist prior to their attendance at the workshop (see Break-out Group Needs Assessment). A full analysis of the outcomes and effectiveness of the workshop is planned for publishing in early November 2001.

Evaluations of the workshop were distributed, and early indications held very high ratings for the workshop location, methodology and effectiveness. Many sites commented positively toward planning another workshop soon and offered suggestions on improving the workshop (see Evaluation of Workshop by Attendees). Prior to the workshop, numerous sites stated that they were unable to attend this first workshop for a variety of reasons, but hoped that another would be held. Nearly all of the 28 sites who were invited but could not attend mentioned that they would attend another if held in the future. Several sites in attendance also stated that they would attend a future workshop if held, in order to keep up with the status of remediation efforts of program and service providers.

WORKSHOP COORDINATION TEAM

WORKSHOP COORDINATION TEAM

SMALL SITES WORKSHOP CORE TEAM

Brent Ives – Lawrence Livermore National Laboratory (LLNL) Workshop Leader

Debbie Malone – LLNL, Workshop Coordinator

Dave Parks – Idaho National Engineering and Environmental Laboratory (INEEL), Core Team

Gary Polansky – Sandia National Laboratories (SNL), Core Team

ADDITIONAL WORKSHOP COORDINATORS

Cathy Ottinger – SNL

Kathy McBride - INEEL

David Sala – Sala and Associates (SNL Contract)

Paul Smith - INEEL

Traci Taul - INEEL

ANNOUNCEMENTS AND INVITATIONS

United States Government

Department of Energy

Albuquerque Operations Office

memorandum

DATE: JUL 19 2001

REPLY TO: NMSPO:JOL

SUBJECT: DOE Small Sites Nuclear Materials Issues Support Workshop

TO: Distribution

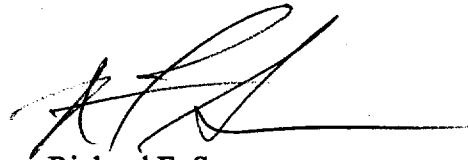
This memorandum is for your information.

You are invited to a workshop designed to address the programmatic and operational nuclear material management needs of small sites within the DOE complex. This workshop is sponsored by the DOE/EM-50 Nuclear Materials Focus Area, the DOE AL/EM-20 Nuclear Material Stewardship Program and hosted by the Lawrence Livermore National Laboratory. The workshop purpose is to initiate and enhance the communication between small sites and DOE nuclear materials management groups in order to resolve issues related to site specific nuclear material management and disposition. These groups have technical expertise, contacts, and resources to help your site manage nuclear material disposition. It is planned that the following groups will be available at the workshop:

- Nuclear Material Focus Area (NMFA)
- Non-Actinide Isotope and Sealed Source Management Group (NISSMG)
- Waste Elimination Team (WET)
- Off-Site Source Recovery Project (OSRP)

It is planned that this workshop will be held in Las Vegas, Nevada on September 11 & 12, 2001. Attached are a proposed synopsis and agenda for the meeting as well as LLNL contacts that are providing coordination functions. Please indicate your interest in this work shop by providing your response to LLNL (Debbie Malone, (925) 422-0546, Email: malone2@llnl.gov) no later than July 27, 2001.

If you have any questions, please contact Gary Roberson (NMFA) at (505) 845-5805 or James O. Low (NISSMG) at (505) 845-5458.



Richard F. Sena
Director
Nuclear Material Stewardship
Project Office

JUL 19 2001

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JUL 19 2001

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P. Saxman, AL/TTD

G. Roberson, AL/NMSPO

J. Low, AL/NMSPO

Emailed on 7/23/01 to the Nuclear Materials Managers at all 47 sites providing initial information regarding the workshop along with the Memorandum from Richard Sena, DOE Albuquerque (see previous page for memo). Information was also emailed to the site's Operations Office contact, Technical Project Office contact, and DOE Headquarters contact.

NUCLEAR MATERIALS FOCUS AREA SMALL SITES MATERIALS ISSUES SUPPORT WORKSHOP

You are invited to a unique workshop that will allow you to get a handle on your site's nuclear materials issues. This workshop is sponsored by the DOE/EM-50 Nuclear Materials Focus Area, the DOE AL/EM-20 Nuclear Material Stewardship Program and hosted by the Lawrence Livermore National Laboratory and is being held for the sole purpose of getting you in touch with organizations whose purpose it is to help you with your nuclear materials problems.

Here are some responses we are getting from sites around the country:

“Finally, a comprehensive, centralized effort to identify, share, and solve nuclear materials issues for our small site!”

“This is exciting: a place to go to get some help with my nuclear material issues.”

“What a great idea!”

- Come hear from several groups who are organized solely to help you with your nuclear materials issues. These groups have expertise, contacts, and resources to help your site!
 - Nuclear Material Focus Area (NMFA)
 - Non-Actinide Isotope and Sealed Source Management Group (NISSMG)
 - Waste Elimination Team (WET)
 - Off-Site Source Recovery Project (OSRP)
- Come to share your needs and allow these groups to offer suggestions, take actions, gather resources, or refer to action on your specific issues. Register your needs with the Nuclear Materials Focus Area for increased visibility and focus on your issues.
- Come to find that unique path-forward for your toughest nuclear materials issues.
- Come to find out what help is available out there.

Please contact Debbie Malone at Lawrence Livermore National Laboratory by Friday, 7/27/01 for pre-registration and to receive a workshop packet with more detailed information:

Phone: (925) 422-0546

Fax: (925) 423-1685

Email: malone2@llnl.gov

PRELIMINARY AGENDA

NUCLEAR MATERIALS FOCUS AREA SMALL SITES MATERIALS ISSUES SUPPORT WORKSHOP

**Gold Coast Hotel Conference Center
4000 West Flamingo Road
Las Vegas, NV 89103-4088**

September 11-12, 2001

Tuesday, September 11, 2001

-
- Introduction of Participating Sites and Service Provider Organizations
- Presentations by Service Providers
 - Nuclear Material Focus Area (NMFA)
 - Non-actinide Isotope and Sealed Source Management Group (NISSMG)
 - Waste Elimination Team (WET)
 - Off-site Source Recovery Project (OSRP)
- Site Presentations of Their Nuclear Material Needs
- Questions and Answers to Sites/Service Providers
- Service Provider Break Out Groups

Wednesday, September 12, 2001

- Report of Working Group Findings
 - Handoffs
 - No Paths
 - Win-Wins
 - Problem Sharing
- Site Directions and Actions
- Service Providers' Opportunities and Actions
- Guidance to Sites
- Paths Forward, Final Needs Registration and Closeout

**NUCLEAR MATERIALS FOCUS AREA SMALL SITES
MATERIALS ISSUES SUPPORT WORKSHOP
September 11-12, 2001**

Workshop Synopsis

The purpose of the Nuclear Materials Focus Area - Small Sites Materials Issues Support Workshop is to have the DOE small sites who have accountable nuclear materials meet to discuss, register, and open pathways for remediation. This meeting is sponsored by the DOE/EM-50 Nuclear Materials Focus Area, the DOE AL/EM-20 Nuclear Materials Stewardship Program and hosted by the Lawrence Livermore National Laboratory. The meeting provides a unique forum to connect sites having nuclear materials needs with service providers that can begin to create pathways toward remediation/disposition.

The following four service providers will bring presentations outlining the types of assistance they can provide to resolve existing and future nuclear materials issues for small sites:

- Nuclear Materials Focus Area (NMFA)
- Non-actinide Isotope and Sealed Source Management Group (NISSMG)
- Waste Elimination Team (WET)
- Off-site Source Recovery Project (OSRP)

In order to get an overall view of the issues that need to be registered and addressed, each site attending should be prepared to give a 15-minute presentation of their site's nuclear materials needs. To discuss the issues in more detail, the sites will then be provided the opportunity to breakout into groups to meet with the relevant service provider representatives.

Each breakout group will share a report of the working group findings (i.e., handoffs, no paths, win-wins, problem sharing). Site needs, directions, and actions will be discussed and registered along with service provider opportunities and actions. Guidance will be given to individual sites as to the path forward for their issues.

Outcome

Currently, small site interactions are ad hoc. This meeting will proactively increase small site needs awareness and provide awareness of the services/assistance that is available through the service providers. It will also provide an assessment of small site needs registered there and facilitate activities with sites to provide them with existing nuclear materials management and disposal options.

A Nuclear Materials Focus Area materials needs assessment will be prepared at the end of the meeting. This report will provide technology needs assessment, highlight integration opportunities, point out transportation packaging requirements, as well as a basis for future service provider resource requirements to support the small sites within the DOE Complex.

NUCLEAR MATERIALS FOCUS AREA SMALL SITES
MATERIALS ISSUES SUPPORT WORKSHOP
September 11-12, 2001

Service Provider Statements

Four service providers will be bringing presentations to the workshop outlining the types of assistance each of them can provide to resolve existing and future nuclear materials issues for small sites. Below is a descriptive paragraph from each of the service providers giving an overall view of their services:

Nuclear Materials Focus Area

The Nuclear Materials Focus Area (NMFA) is part of the Office of Science and Technology (OST, EM-50) focus-area-centered approach to managing the development of technology for the Office of Environmental Management (EM). The NMFA is chartered to develop and deploy technology to nuclear materials needs across the DOE complex. Primary technical scope includes the processing, stabilization, packaging, transportation, storage and transferring of nuclear materials currently in the custody of EM. The scope also includes such issues within the whole DOE complex.

Upon needs integration and registration with the NMFA, smaller sites can expect that their needs will be included in the annual NMFA "call for technology development" where larger sites and service providers propose assistance, technology application or technology development to help solve their needs.

Non-actinide Isotopes and Sealed Sources Management Group

The Non-actinide Isotopes and Sealed Sources Management Group's (NISSMIG) scope is chartered to assist with issues relating to excess, orphaned materials, including a wide variety of radionuclides, all radioactive isotopes with $Z < 90$ (non-actinide), man-made isotopes and excess loan lease (non-licensed) materials at universities and in industry throughout the DOE complex. They provide assistance to closure sites and mechanisms for use, reuse, and recycle of materials. The group has several success stories including the Mound site closure Pu-238 project and transportation assistance, Fernald site disposition maps for enhanced closure planning and inclusion with receiver site plans, and Rocky Flats where the group provided new options for disposition for orphaned small sources. The group is currently assisting Hanford, Battelle Columbus, Oak Ridge, Sandia, and LLNL with disposition planning and remediation services.

Smaller sites can expect direct assistance at the workshop with their needs from the NISSMIG. The group is prepared to work with your site to begin the scoping and planning stages and offer valuable advice and perspective to you toward remediation of your issues.

Waste Elimination Team

The Waste Elimination Team (WET) is sponsored by the TRU and Mixed Waste Focus Area (TMFA) to provide technical and engineering solutions to complex-wide MLLW problems. The WET consists of subject matter experts from throughout the DOE complex that identify problematic MLLW streams and, working through "principal investigators" at affected sites, establish a path forward for all similar DOE waste.

The WET can help sites ensure that nuclear materials are stored, characterized, treated, and packaged in a way that will support disposal when they are declared “waste.” In addition, the WET can help sites:

1. Ensure that the necessary waste technologies are available when needed
2. Identify and quantify problematic wastes
3. Determine effective treatment and disposal alternatives
4. Combine with other sites to establish mechanisms to treat and dispose of similar waste
5. Identify key DOE and commercial points-of-contact

Examples of problematic waste streams that the WET is currently working on include gas cylinders, uranium and thorium chips, batteries, elemental mercury, and mercury-contaminated solids/liquids. Waste streams that are slated for work in FY 2002 include a tritiated waste survey, oversized boxes and components, classified materials and waste, and reactivities. Examples of technologies being deployed are the No-Char process for stabilizing/solidifying organic liquids and sludges, thermal desorption for PCB contaminated wastes, and gas vitrification for solid and liquid wastes requiring incineration.

The point-of-contact for the WET is Greg Hulet (208-526-0283; hag@inel.gov).

Off-site Source Recovery Project

The Off-site Source Recovery Project (OSRP) recovers and manages unwanted radioactive sealed sources and other radioactive material that:

- Present a risk to public health and safety
- Present a potential loss of control by a Nuclear Regulatory Commission (NRC) or agreement state licensee
- Are excess and unwanted and are a U.S. Department of Energy (DOE) responsibility under Public Law 99-240, or are DOE-owned.

The project is sponsored by DOE’s Office of Technical Program Integration (EM-22) and the Albuquerque Operations Office Waste Management Division and operates from Los Alamos National Laboratory (LANL). It focuses on the problem of sources and devices held under U.S. Nuclear Regulatory Commission or agreement state licenses for which there is no disposal option. The project was reorganized in 1999 to more aggressively recover and manage the estimated 18,000 sealed source devices that will become excess and unwanted over the next decade. This reorganization combined three activities, the Radioactive Source Recovery Program, the Off-site Waste Program, and the Pu-239/Be Neutron Source Project.

AGENDA

NUCLEAR MATERIALS FOCUS AREA SMALL SITES MATERIALS ISSUES SUPPORT WORKSHOP

**September 11-12, 2001
8:30 A.M. — 5:00 P.M.**

**Gold Coast Hotel Conference Center
4000 West Flamingo Road
Las Vegas, NV 89103-4088**

Tuesday, September 11, 2001

- | | |
|----------|---|
| 8:30 AM | Introduction of Participating Sites and Service Provider Organizations and Logistics |
| 9:00 AM | Presentations by Service Providers <ul style="list-style-type: none">• Nuclear Materials Focus Area (NMFA)• Non-actinide Isotope and Sealed Source Management Group (NISSMG) |
| 10:00 AM | Break |
| 10:15 AM | Presentations by Service Providers (cont.) <ul style="list-style-type: none">• Waste Elimination Team (WET)• Off-site Source Recovery Project (OSRP) |
| 12:00 PM | Break for Lunch |
| 1:15 PM | Site Presentations of Their Nuclear Materials Needs |
| 3:00 PM | Break |
| 3:15 PM | Questions and Answers to Sites/Service Providers |
| 3:30 PM | Service Provider Break Out Groups |
| 5:00 PM | Meeting Adjourned |

Each day workshop attendees will need to check the directory on the hotel's second level to verify specific meeting room location

AGENDA

NUCLEAR MATERIALS FOCUS AREA SMALL SITES MATERIALS ISSUES SUPPORT WORKSHOP

Wednesday, September 12, 2001

- | | |
|----------|---|
| 8:30 AM | Report of Working Group Findings <ul style="list-style-type: none">• Handoffs• No Paths• Win-Wins• Problem Sharing |
| 10:00 AM | Break |
| 10:15 AM | Site Directions and Actions |
| 12:00 PM | Break for Lunch |
| 1:15 PM | Service Providers' Opportunities and Actions |
| 1:45 PM | Guidance to Sites |
| 2:15 PM | Paths Forward, Final Needs Registration and Closeout |
| 3:00 PM | Break |
| 3:15 PM | Paths Forward, Final Needs Registration and Closeout (cont.) |
| 5:00 PM | Meeting Adjourned |

**Each day workshop attendees will need to check the directory
on the hotel's second level to verify specific meeting room location**

**NUCLEAR MATERIALS FOCUS AREA SMALL SITES
MATERIALS ISSUES SUPPORT WORKSHOP
September 11-12, 2001**

Workshop Center

**Gold Coast Hotel Conference Center
4000 West Flamingo Road
Las Vegas, Nevada 89103**

A block of tower guest sleeping rooms has been set aside at the Gold Coast Hotel Conference Center at a rate of \$50 per night. Please call **the Gold Coast Room Reservation Department at (888)402-6278** and mention that you will be attending the “Lawrence Livermore National Laboratory/DOE Small Sites Workshop” to make your reservations. Reservations received after 8/10 will be accepted on an “availability” basis only and may be subject to a higher “non-group” rate.

The Gold Coast is a **3 Star, 3 Diamond property** and is located just one mile west of the fabulous Las Vegas Strip and offers a number of features:

- ****New**** complimentary fitness center (6am – 10 pm)
- Five restaurants (including one of Las Vegas’ favorite prime rib houses and a newly remodeled buffet)
- Free shuttle service to and from the “Strip” (9:30 am – midnight)
- Complimentary valet, self-serve and R.V. parking
- Complimentary child care center for ages two years through eight years of age
- Heated outdoor swimming pool
- 72-lane bowling center
- Ice cream parlor
- 24-hour room service
- Americans with Disabilities Act (ADA) compliant with handicapped rooms on all floors

**Additional Information
(mileage and transportation charges are estimated)**

- **Sorry...no airport shuttle**
 - Two miles from McCarran International Airport (LAS)
 - \$12 - \$16 one-way cab from McCarran International Airport (up to four persons)
 - Airport shuttle transportation to Gold Coast (\$5 one way, \$9 round trip – per person)
- One mile to the Las Vegas Strip
- Ten miles to downtown Las Vegas (Fremont Street Experience)
- Thirty minutes to Hoover Dam and Lake Mead
- Six hours to Grand Canyon (North or South Rims)
- Four hours to Bryce and Zion National Parks
- Close to championship golf courses
- Close to three **upscale** shopping malls and outlet mall
- Call hotel Concierge (800/331-5334, ext. 451) to set up golf tee times, shopping or touring excursions

Registration Form / Site Presentation Confirmation

Submit by August 9, 2001

For more information or questions, contact:
Debbie Malone (malone2@llnl.gov)
Phone: (925)422-0546

WORKSHOP AGENDA

AGENDA

NUCLEAR MATERIALS FOCUS AREA SMALL SITES MATERIALS ISSUES SUPPORT WORKSHOP September 11-12, 2001

**Gold Coast Hotel Conference Center
4000 West Flamingo Road
Las Vegas, NV 89103-4088**

Tuesday, September 11, 2001

8:30 AM	Introduction and Logistics	Brent Ives
9:00 AM	Presentations by Service Providers <ul style="list-style-type: none">• Nuclear Materials Focus Area (NMFA)• Non-actinide Isotope & Sealed Source Management Group (NISSMG)• Waste Elimination Team (WET)	Gary Roberson Jim Low Greg Hulet
10:00 AM	Break	
10:15 AM	Presentations by Service Providers (continued) <ul style="list-style-type: none">• Off-site Source Recovery Project (OSRP)• Classified Parts Disposition & Pu Contaminated HEU Cleaning• National Transportation Program	Shelby Leonard Michael Blau Steven Hamp
12:00 PM	Break for Lunch	
1:15 PM	Site Presentations	
3:00 PM	Break	
3:15 PM	Site Presentations (continued)	
5:00/5:30 PM	Meeting Adjourned	

**Each day workshop attendees will need to check the directory
on the hotel's second level to verify specific meeting room location**

AGENDA

NUCLEAR MATERIALS FOCUS AREA SMALL SITES MATERIALS ISSUES SUPPORT WORKSHOP

Wednesday, September 12, 2001

8:00 AM Introduction/Agenda for Today's Workshop

8:15 AM Service Provider Break-out Groups

10:00 AM Break

10:15 AM Service Provider Break-out Groups (continued)

12:00 PM Break for Lunch

1:15 PM Report from Break-out Groups

3:00 PM Break

3:15 PM Rollup of Technology Needs and Opportunities

Brent Ives

3:45 PM Guidance to Sites

Brent Ives

4:00 PM Paths Forward, Final Needs Registration and Closeout

5:00 PM Meeting Adjourned

**Each day workshop attendees will need to check the directory
on the hotel's second level to verify specific meeting room location**

ATTENDANCE LISTS

DOE SITES ATTENDANCE LIST

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BREAK-OUT GROUP NEEDS ASSESSMENT

SUMMARY OF NEEDS CONNECTIONS*

SITE	OSRP	NMFA	NISSMIG	INEEL PKG.	CLASSIFIED PARTS	WET	NTP	TOTAL
Boeing (ETEC)		X	X			X	X	4
LLNL			X					1
Fernald		X	X			X		3
WASTREN	X		X					2
ANL-E			X			X	X	3
Bechtel Nevada			X		X	X	X	4
LANL					X		X	2
LBNL			XXX			X		4
GE Vallecitos	X	X	X			X		4
EML	X	X	X		X		X	5
Jefferson Lab			X			X		2
Sandia – Liv.			X		X			2
Sandia – Alb.	X	X	X		X		X	5
Stanford			X			X	X	3
Oak Ridge Office (3)		XXX		X			X	5
TOTAL	4	8	15	1	5	8	8	49

* - Note: These connections were made via break-out groups conducted at the workshop.
Some of the discussions on needs may have already been registered with the service providers.
Not all are new needs. A detailed need analyses are forthcoming in November 2001.

EVALUATION OF WORKSHOP BY ATTENDEES

RESULTS OF EVALUATION OF WORKSHOP BY ATTENDEES

Nuclear Materials Focus Area Small Sites Materials Issues Support Workshop September 11-12, 2001

QUESTION/COMMENTS

ATTENDEE RESPONSES

Was Las Vegas a convenient location for the workshop?

YES: 23 NO: 1

Comments:

1. Not Really (New York)

Was a two-day workshop sufficient time to cover the material?

YES: 22 NO: 2

Comments:

1. One day only
2. 1.5 days needed

Did you find the Site presentations helpful?

YES: 23 No: 0

Comments:

1. To understand how the co-participants deal with their inventories
2. Informative and educational re: other capabilities and expertise throughout the complex

Was enough time allotted to the break-out groups?

YES: 23 NO: 0

Comments: None

Was there sufficient representation from the Service Providers?

YES: 22 NO: 0

Comments:

1. Maybe someone with expertise in dealing with waste gas as opposed to solids
2. Yes, well detailed
3. Very helpful
4. Are there other service providers for other areas – i.e., disposal of orphans?

RESULTS OF EVALUATION OF WORKSHOP BY ATTENDEES (cont.)

Is there another Service Provider that should be invited to future meetings?

YES: 7

NO: 7

Comments:

1. *Gaseous waste*
2. *Commercial LLRW service providers*
3. *An NTS LLW facility rep*
4. *PMMG would be glad to attend as appropriate*
5. *Mobile decon teams*
6. *Perhaps NDA/NDE capabilities info/focus*
7. *Yes, the contractors per se*

Is there another Site you know of that could benefit from attending a future workshop?

YES: 9

NO: 7

Comments:

1. *Other small SC sites (ORNL)*
2. *We will work with Ames Lab and Fermi Lab (DOE CH)*
3. *Mound*
4. *SRS Tritium Ops/Mound Ops/LINL72/SRT @ LANL*
5. *West Valley*
6. *More sites were interested but did not show*
7. *Paducah and Portsmouth Gaseous Diffusion Plants*
8. *DOE ORO EM subcontractors*
9. *Fermi Lab*

Are you satisfied with the direction received from the workshop for your Site's materials issues?

YES: 21

NO: 1

Comments:

1. *Good opportunity to understand small site concerns*
2. *Yes, especially on packaging issues*
3. *Good one-on-one for pre-plan of recycling and disposal pathways*
4. *Good suggestions from NTP and NMFA*
5. *Sandia has already "chased" many disposition leads, so much of the guidance was of little additional value*

RESULTS OF EVALUATION OF WORKSHOP BY ATTENDEES (cont.)

Would you recommend those Sites unable to attend this workshop attend any future workshops?

YES: 22

NO: 0

Comments:

- 1. If for no other reason, to help NISSMG and NMFA see how large some problems are for priority purposes*
- 2. Or at least post info to web site*

What suggestions do you have to improve future workshops?

- 1. Allow time to review handouts prior to start of workshop*
- 2. Break-out sessions were a little chaotic. Perhaps sessions between providers and sites could be scheduled with a bit more structure. There was a lot of cross talk between sites which may have diluted the effectiveness or perhaps the cross talk actually added value?*
- 3. Commercial LLRW provider, reviews of site WACs, LLRW characterization*
- 4. Before break-outs, consult sites to make contacts briefly. Can't solve all problems at once. Do not monopolize provider's time. Other sites may need to speak to them also.*
- 5. More tritium/gases SMEs*
- 6. If the DOE complex can identify problems, we "all" have a path forward maybe more easily established*
- 7. You all did a good job. Any additional vendors would be interesting/helpful*
- 8. Need more representation from all sites. Maybe positive feedback from their workshop will increase participation*
- 9. Intervention at large sites with smaller might promote more beneficial cooperation and solutions*
- 10. Move locations from one meeting to another so other sites might attend. Give greater attention to advertising the workshops*
- 11. Get more small sites involved*

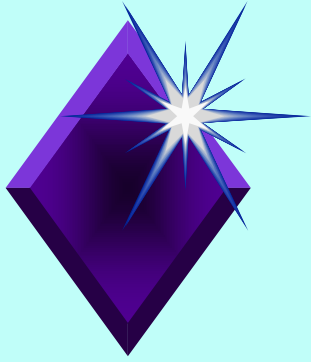
Additional Comments:

- 1. Would a workshop of this type be useful to the commercial companies and universities that hold DOE loan/lease material?*
- 2. I think things went well*
- 3. Very helpful and informative*
- 4. I believe the objectives of getting the Service Providers together with the smaller organizations that have difficult or unique disposal/disposition needs. This workshop was excellent for networking purposes, disposition is highly global effort requiring a high level of integration. I presume that the workshop was very helpful for small sites just beginning the process of dispositioning material. I'm sure this moved them way up on the learning curve. Good job, thanks!*

RESULTS OF EVALUATION OF WORKSHOP BY ATTENDEES (cont.)

5. *This workshop helped our site. We were able to make contact with OSRP to make arrangements to dispose of our Am/Be logging probe tips this next FY.
Thank you, very good!*
6. *Very good workshop. Brent did a good job. We should have more of these workshops*
7. *Good job – thanks!*
8. *Excellent workshop. Real answers or points of contacts for problem solving.*
9. *Under the circumstances (terrorist attacks), the meeting was well facilitated and turned out more valuable than expected!*
10. *The format was very workable*
11. *Clarity of presentations and follow-up or answers and win-win proposals (pre-proposals)*

WORKSHOP INTRODUCTION



Small Sites Materials Issues Support Workshop

Brent Ives

LLNL

September 11–12, 2001



Objective and Sponsors

- ◆ **Provide Smaller Sites with technical and logistical support in solving their nuclear materials issues**
- ◆ **Sponsored by:**
 - ◆ **NMFA**
 - ◆ **Nuclear Materials Stewardship/NISSMIG**
 - ◆ **LLNL – Coordination**



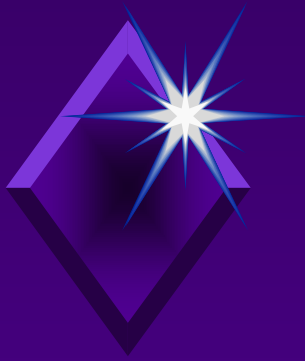
Program Approach and Strategy

- ◆ **Provide means by which Small Sites can get the help they need.**
 - ◆ **Workshops**
 - ◆ **Direct coordination support for developing needed technologies**
 - ◆ **Provide POC entity to find support**
- ◆ **This workshop –**
 - Connect Small Sites with Service Providers**



This Workshop – Desired Outcome

- ◆ Each site has an opportunity to share their issues.
- ◆ Each service provider articulates their capabilities, accomplishments and abilities to assist.
- ◆ Every small site need is adequately documented for path forward assignment.



Agenda

Tuesday, September 11, 2001

8:30 AM Introduction and Logistics

Brent Ives

9:00 AM Presentations by Service Providers

- Nuclear Materials Focus Area (NMFA)
- Non-actinide Isotope & Sealed Source Management Group (NISSMG)
- Waste Elimination Team (WET)

Gary Roberson
Jim Low
Greg Hulet

10:00 AM Break

10:15 AM Presentations by Service Providers (continued)

- Off-site Source Recovery Project (OSRP)
- Classified Parts Disposition & Pu Contaminated HEU Cleaning
- National Transportation Program

Shelby Leonard
Michael Blau
Steven Hamp

12:00 PM Break for Lunch

1:15 PM Site Presentations

3:00 PM Break

3:15 PM Site Presentations (continued)

5-5:30 PM Meeting Adjourned



Agenda

Wednesday, September 12, 2001

8:00 AM Introduction/Agenda for Today's Workshop

8:15 AM Service Provider Break-out Groups

10:00AM Break

10:15 AM Service Provider Break-out Groups (continued)

12:00 PM Break for Lunch

1:15 PM Report from Break-out Groups

3:00 PM Break

3:15 PM Rollup of Technology Needs and Opportunities

Brent Ives

3:45 PM Guidance to Sites

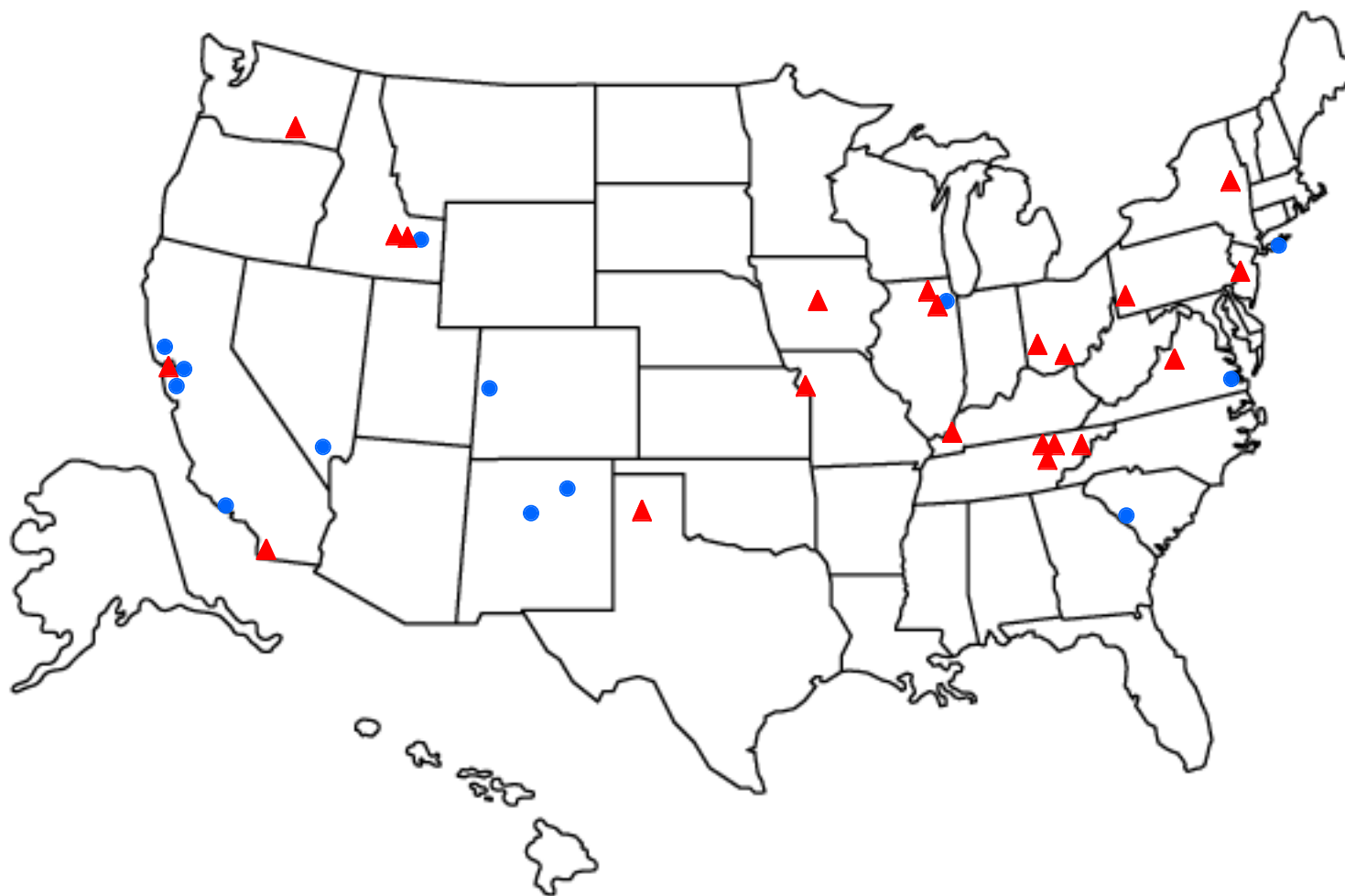
Brent Ives

4:00 PM Paths Forward, Final Needs Registration and Closeout

5:00 PM Meeting Adjourned

Nuclear Materials Focus Area Small Sites Materials Issues Support Workshop

September 11-12, 2001



- DOE Sites Attending
- ▲ DOE Sites Expressing Interest in Next Meeting

PRESENTATIONS BY SITES

Technology Needs for Transuranic (TRU) Waste and Material

Ed Hohman

Technology Development Manager

September 11, 2001



Oversize TRU Waste Size Reduction NV07

A technology is needed to size-reduce 58 oversize TRU waste boxes and contents at the Nevada Test Site (NTS) for disposal at the Waste Isolation Pilot Plant (WIPP)

- Total volume is 267 m³



Background

- Oversize TRU boxes cannot be characterized at the Waste Examination Facility in the current configuration



- Without proper characterization and packaging, the waste cannot be shipped to WIPP for disposal
- Waste is currently being stored in the TRU Pad Cover Building in Area 5

Background

(continued)

- Because the waste is considered mixed, Nevada Division of Environmental Protection and Resource Conservation and Recovery Act require weekly inspections
- “Baseline” is to ship waste to another site for size reduction
- Other U.S. Department of Energy (DOE) sites (Rocky Flats, Los Alamos, and Richland) have significant quantities of oversize TRU waste compared to Nevada



Technology Requirements

- Size reduce boxes up to 13'7" long, 6'4" wide and 6'9" high
- Cut stainless steel up to a thickness of _"
- Handle boxes containing up to 51 grams of Pu-239
- Meet shipping requirements to offsite facility
- Offsite facility able to accept "out-of-state" waste



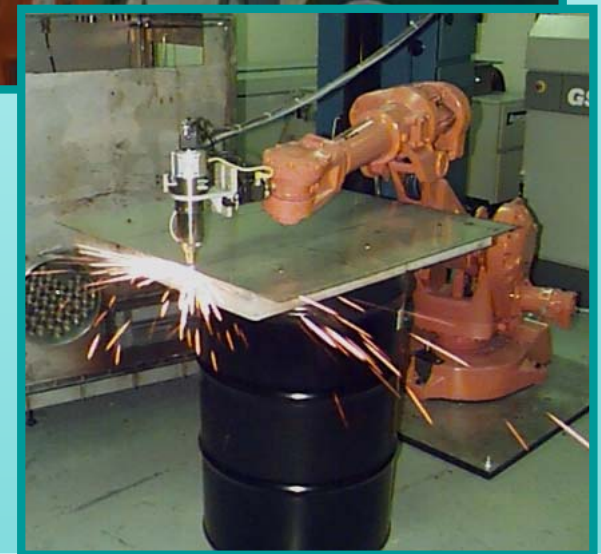
Expected Benefits

- Size reduction technology would reduce one entire waste stream (oversize TRU boxes) at the NTS
- Technology deployment would ensure appropriate offsite disposal
- Removal of waste from the NTS addresses stakeholder concerns of equity for Nevada
- Offsite size reduction would be more cost effective than onsite given the relatively small volume of waste at NTS



Disposition of Need

- EM-50's Accelerated Site Technology Deployment program has provided partial funding for the Oversize TRU Waste Laser Cutting Project
- Laser cutting equipment is being procured and deployed at LANL
- In FY 2001, NNSA/NV began planning to ship oversize boxes to an offsite facility in FY 2003
- In FY 2002, the TRU and Mixed Waste Focus Area will be supporting NTS efforts to have Los Alamos National Laboratory (LANL) size-reduce the boxes



Classified TRU Material Sanitization

NV19

A technology is needed that will sanitize
248 drums of classified TRU material to
enable their disposal at WIPP – Total
volume is 54 m³



Background

- Classified material cannot be disposed at WIPP because it is not “waste”
- NTS does not have sanitization (declassification) capabilities
- Baseline is for material to be shipped offsite for declassification
- Material is currently being stored in a classified area with required security inspections
- Other DOE sites (Rocky Flats, Los Alamos and Richland) have significant quantities of classified TRU material compared to Nevada

Technology Requirements

- Able to sanitize materials such as metals (stainless steel), graphite, and plastics
- Able to destroy the shape and thickness of the material
- Able to contain TRU levels of contamination
- Able to provide proper and sufficient security



Expected Benefits

- Sanitization of classified TRU material would remove one entire radioactive category, stored classified TRU material, from the NTS
- Technology deployment would ensure appropriate offsite disposal
- Stakeholder concerns on equity would be addressed



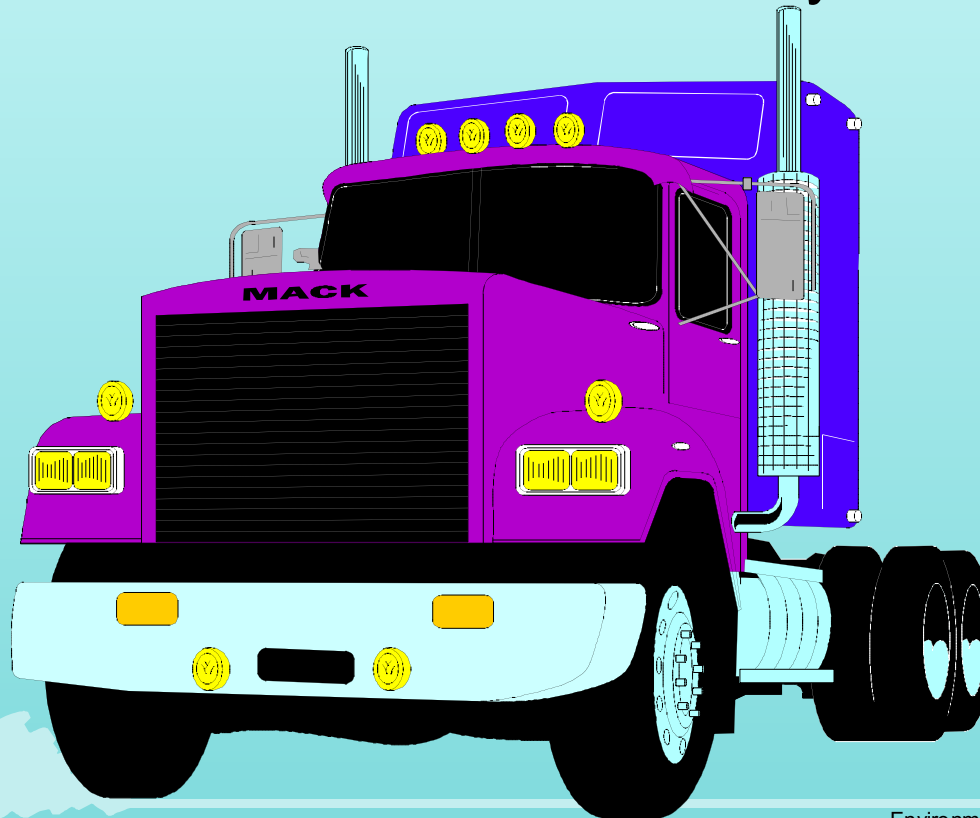
Disposition of Need

- NNSA/NV has participated in the Classified Non-SNM Working Group and the “WIPP Pipeline” to find an acceptable disposition method
- Recycling may be a potential disposition path forward



Oversize TRU Waste Boxes Transportation NV26

A method is needed to transport oversize TRU waste boxes to an offsite size-reduction facility



Background

- This need relates to the disposition of the 58 oversize TRU waste boxes and contents being stored in Area 5 of the NTS
- The need supports the Waste Management baseline of shipping the waste to another site for size reduction, characterization and disposal at WIPP
- Lawrence Livermore National Laboratory (LLNL) has 32 similar boxes to be disposed



Technology Requirements

- Handle all oversize TRU waste boxes up to 13'7" long, 6'4" wide, and 6'9" wide
- Handle boxes containing up to 51 grams of Pu-239
- Shipping method and shipping container meeting requirements of DOE, Nuclear Regulatory Commission or U.S. Department of Transportation, as applicable
- Transportation by truck is assumed



Expected Benefits

- Transportation to an offsite size-reduction facility would remove one entire radioactive waste category, oversize TRU waste boxes, from the NTS
- Removal of waste from the NTS addresses stakeholder concerns of equity for Nevada
- Offsite size-reduction would be more cost-effective than onsite given the relatively small volume of waste at the NTS



Disposition of Need

In FY 2002, the TRU and Mixed Waste Focus Area will be supporting NTS and LLNL efforts to have LANL size-reduce the boxes -- the targeted LANL facility is the Decontamination and Volume Reduction Facility



Discard needs of the LANL Tritium Facilities

Suzanne Kitten, Operations Lead
Weapons Engineering Tritium Facility

Tritium Science and Engineering

Weapons Engineering Tritium Facility (WETF)

Tritium Science Test Assembly (TSTA)

Tritium Science Fabrication Facility (TSFF)

High Pressure Tritium Facility (TA-33)

Items too Large for Calorimetry

- Uranium Beds
- Titanium beds, lacking analysis
- Catalytic Reactors, lacking analysis
- Legacy items, lacking analysis

Classified Discards

- Classified Metal Hardware
 - rad/mixed waste issues
 - security issues

Other Discard Issues

- Lithium

Immediate Issues and Needs

- List of DOE "approved" vendors/contractors (approved by LANL?)
- List of approved DOT and DOE containers (approved by LANL WAC?)
- Certification/documentation requirements for approved containers
- The rules for discard change too often



GE Nuclear Energy

GE Vallecitos Nuclear Materials Needs

Presented by Carlos Martinez

E-mail: carlos.martinez@gene.ge.com

Nuclear Materials Focus Area Small Site
Materials Issues Support Workshop

Las Vegas, NV
September 11, 2001

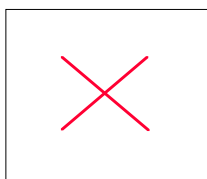




GE Vallecitos Nuclear Center Site



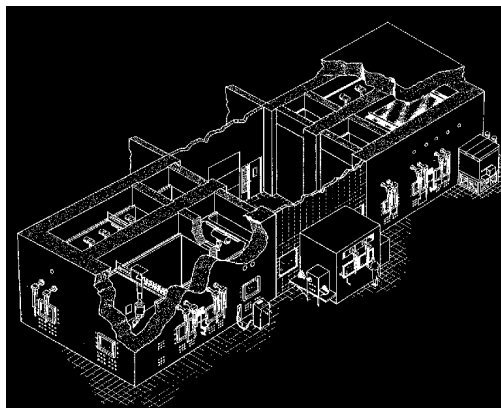
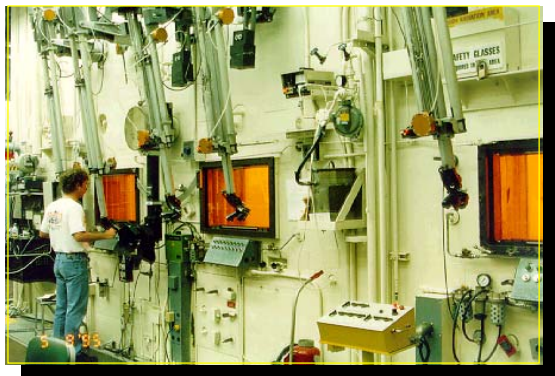
44 Years



CAL/OSHA Star Voluntary Protection Plan Awarded March 2001



Regulatory Overview



Principal Facilities

Hotcell Facilities
Materials & Chemistry Laboratory
Nuclear Test Reactor – 100kW
On-Site Dry Storage Facility
Machine and Electrical Shops

Regulators

- ➡ US Nuclear Regulatory Commission
- ➡ US Department of Transportation
- ➡ US Food & Drug Administration
- ➡ CA Department of Health Services
- ➡ CA Regional Water Quality Control Board
- ➡ CA Bay Area Air Quality Management Dist
- ➡ Tennessee Dept of Envir. & Conservation
- ➡ SC Dept. of Health & Environmental Control
- ➡ CA OSHA

Permits

- ➡ 1 - Operating Materials License
- ➡ 1 - Operating Reactor License
- ➡ 3 - Possess Only Reactor Licenses
- ➡ 3 - Certificate of Compliance - Casks
- ➡ 1 - Transportation
- ➡ 3 - Certificates of Competent Authority (DOT/IAEA)
- ➡ 1 - New Drug Application, Pharmaceuticals
- ➡ 1 - Operating Materials License
- ➡ 1 - Water Discharge Permit
- ➡ 2 - Air Permits
- ➡ 1 - Transport Permit
- ➡ 1 - Transport Permit
- ➡ 2 - Hazardous Materials

Monitored Releases

	% of Limits
➡ Water Effluent	<35
➡ Air Emissions	<20
➡ Radiological - Air	<3
➡ Radiological - Water	0
	Zero Release Facility

Highly Regulated Site

Typical VNC Waste Stream

- ☐ Hotcell Waste – Barnwell
- ☐ Dry Active Waste – Envirocare
- ☐ Aqueous Liquids (<10% solids) – On-site processing
- ☐ Selective Decontamination and Decommissioning





Decontamination and Decommissioning

- ☐ Asbestos Abatement Projects
- ☐ Reclamation of TRU Contaminated Laboratories
- ☐ General Plant Remediation
- ☐ Decommissioning of Hotcell No. 4

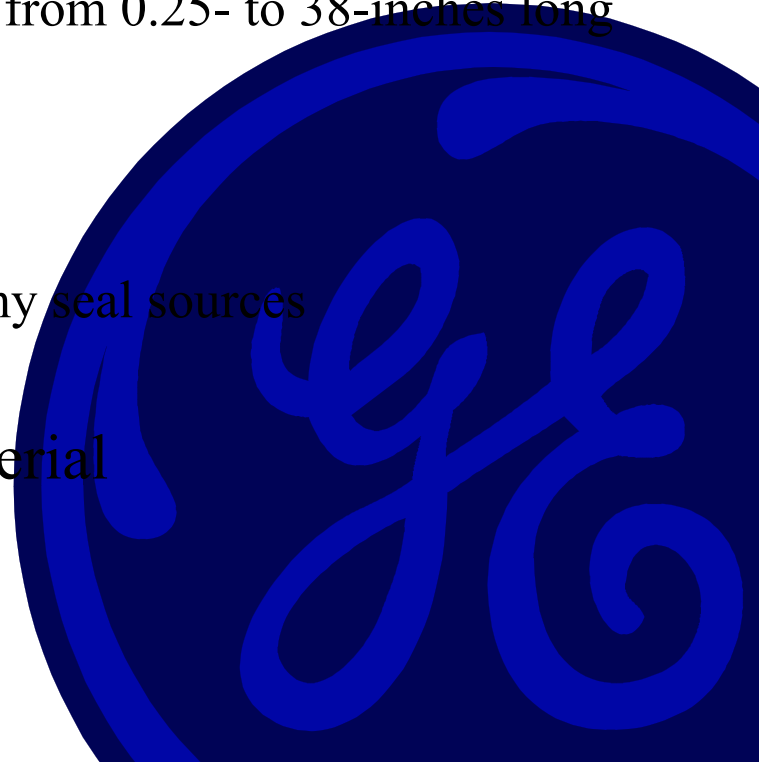
Minimize EHS site concerns





VNC's Nuclear Materials Needs

- ☐ Disposition of DOE-owned Fuel Material
 - One unirradiated MOX fuel rod
 - 197 subsamples ranging from 0.25- to 8-inches long
- ☐ SNM Waste Processing and Packaging Criteria for Disposal
 - Numerous segmented spent fuel rods from 0.25- to 38-inches long
 - TRU solidified waste
- ☐ Disposition of Co-60 Sources
 - Nineteen special form seal sources
 - Approximately 2000 spent radiography seal sources
 - Approximately 700 spent sources
- ☐ Disposition of Other Source Material
 - Nine Cf-252 sealed sources
 - Two Am-Be sealed sources



Nuclear Materials Focus Area Small Sites Nuclear Materials Issues Support Workshop

Warren Strong

Sandia National Laboratories/New Mexico

September 11-12, 2001

Las Vegas, NV

Sandia National Laboratories

Multi-Program National Security R&D Facility

- 50 years of Unique Nuclear R&D
- Non-Processing, Non-Production Facility

SNL Nuclear Materials Operations

- Weapons Testing Operations
Radiation Effects (Reactors)
Drop Tests, Flight Tests, etc.
- Reactor Safety Experiments
- Transportation Safety Testing
- Nuclear Sensor Development

SNL Nuclear Materials Issues

- Unique Inventory
 - Orphaned Experiment Residues
- Limited Material Handling Capability
- No Enduring Corporate Disposition Program
- Dwindling Storage Space
- Dwindling Corporate (Process) Knowledge

Problematic Material Groups

- Sandia Pulsed Reactors II/III Fuel Rings
 - Slightly Irradiated, 10% Mo, Al clad
- DU Weapons Components
 - Classified Shapes
- Reactor Safety Experiment Residues
 - Unique Forms, Mixtures, Uncharacterized
- Mo-99 Targets - HEU
- Non-DP TRU
- One Homeless SNAP unit

SNL Specific Needs

- Material Handling Infrastructure
 - characterization, repackaging
- Corporate Push for NM Disposition
- Disposal Sites for Small-Volumes SNM, unique forms
- Packaging and Transportation Solutions
 - Certifications, Odd Shapes, Security issues

SNL Progress Update

- Dedicated Disposition Hot Cell Facility
- Dedicated Technical Staff
- Working Groups Developing Disposition Pathways for SPR Reactor Fuel, SNAPs & Other materials

Thomas Jefferson National Accelerator Facility

Summary Information

- Construction \$600 million, ~ \$70 million/yr operations
 - Funded by Federal Government, State of Virginia, City of Newport News, foreign contributors, and U.S nuclear physics research community.
- Managed by 53 - university consortium called Southeastern Universities Research Association (SURA) under DOE contract.
- Basic mission:
 - exploration of the nucleus
 - educate the next generation in science
 - partner with industry to apply JLab's advanced
- Jefferson Lab was commissioned in mid - 1995

JLab Summary Information

- Experimental program requires no source, byproduct or special nuclear materials.
- Jefferson Lab is a low-hazard, non-nuclear facility.
- Radiation Control Program conducted under the requirements of 10CFR835.
- Sources in use:
 - special form byproduct material for instrument calibration,
 - special nuclear material in minute (exempt) quantity sources in thermal neutron detection equipment used at site boundary to measure neutron dose equivalent at "environmental" levels .

JLab Summary Information, cont'd.

- JLab also uses numerous exempt quantity and several nonexempt byproduct and NORM "test" sources to test detector materials for high energy physics detector arrays.
- The Jefferson Lab radioactive waste stream:
 - volume activated accelerator produced radioactive material (e.g. Na-22, Be-7, H-3, Mn-54, Co-57)
 - in beam dump cooling systems, resin systems, filters, analytical waste, accelerator components, shielding,
 - associated contamination controls scrap
 - spent detector test sources

JLab Summary Information, cont'd.

- Radioactive material may also be present from neutron activation of components or from expired test sources.
- After six years of full operation, JLab recently made it's first shipment of radioactive waste through commercial vendor according to a DOE exemption.
- Waste consisted principally of:
 - ~ 40,000 lbs metals (mostly accelerator components), containing
 - ~ 20 mCi (mostly Na-22) in the form of solid oxides
- To date, JLab has not identified or disposed of mixed waste.
- Mixed waste may become an issue for future operations.

**U.S. Department of Energy
Environmental Measurements Laboratory**

**Nuclear Materials Focus Area Small Sites
Materials Issues Support Workshop**

September 11-12, 2001

FABIEN RACCAH

*The following viewgraphs were brought and verbally discussed at the workshop.
Text viewgraphs were not provided.*

























PRESENTATIONS BY SERVICE PROVIDERS



Nuclear Materials Focus Area Overview

Gary D. Roberson

DOE Albuquerque Operations Office

September 11, 2001

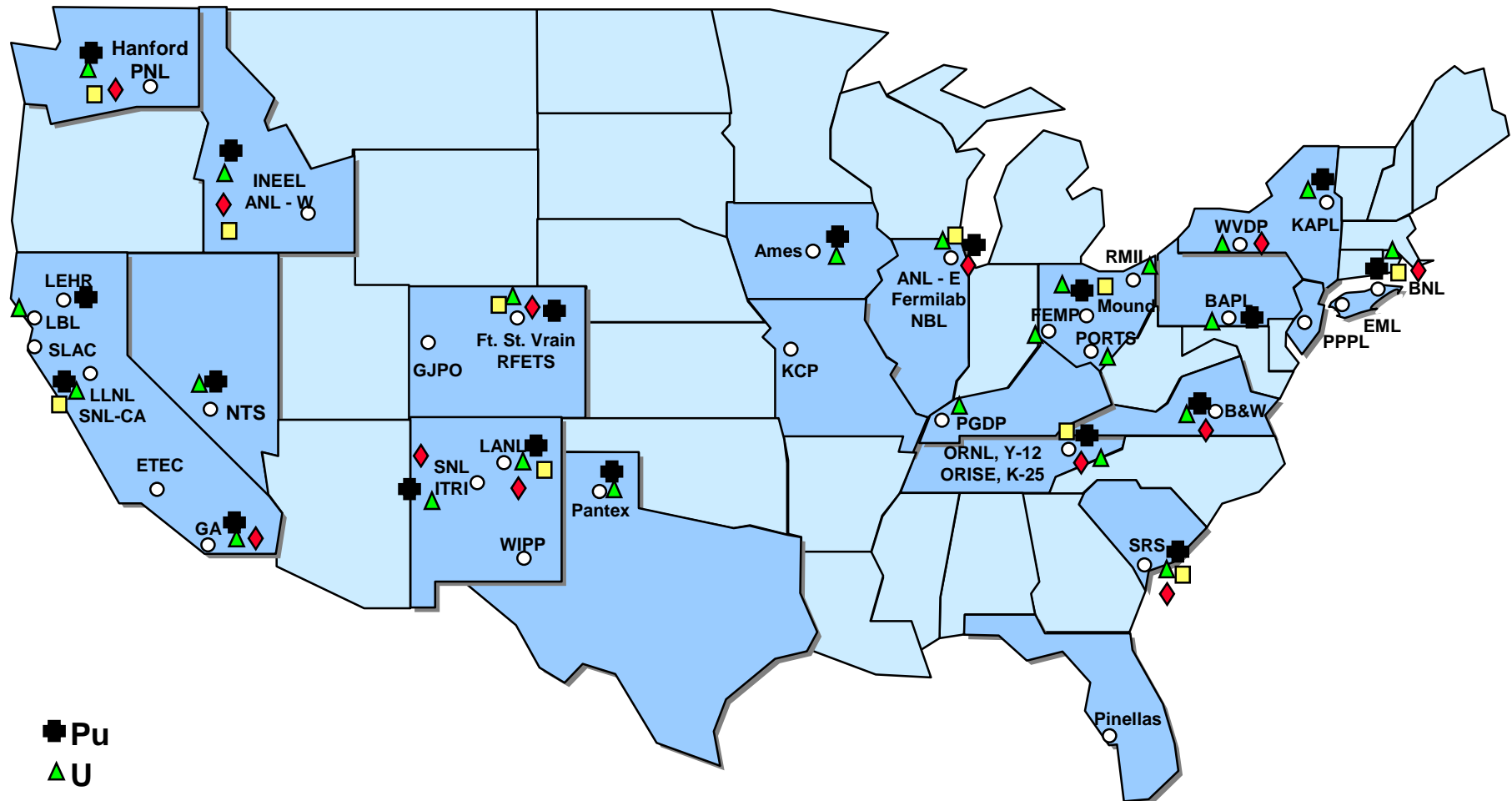
Nuclear Materials Focus Area (NMFA)

- **Chartered in March 1999 by the DOE Office of Science and Technology**
- ***Scope:*** All DOE nuclear materials owned by the Office of Environmental Management (EM), expected to transfer to EM, or housed in EM facilities. These materials include:
 - Transuranics (plutonium, neptunium, ...)
 - Uranium (All isotopes, thorium)
 - Nonactinide Isotopes and Sealed Sources (cesium, strontium, ...)
 - Spent Nuclear Fuel
- ***Fiscal Year 2002 Program:*** Continue to broaden activities to address full scope of NMFA materials and expand activities beyond current sites.



*DOE's Nuclear Material Legacy**

* Reference: Taking Stock. A Look at the Opportunities and Challenges Posed by Inventories from the Cold War Era, Vol. 1, January 1996



More than 800,000 metric tons of materials at 44 sites in 19 states

Spent Nuclear Fuel

Problem

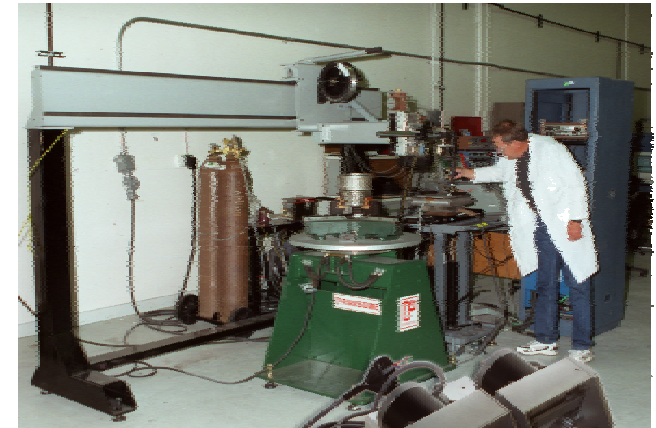
- SNF located at **INEEL, SRS, and Hanford** must be stabilized, characterized, and dry packaged for onsite interim storage, transport to, and final disposition in the geologic repository. Performance based assessments must be completed to show compliance with storage, transport, and disposal criteria.

Solution

- Deploy the high integrity canister at multiple sites.
- Demonstrate remote seal-weld and detection capability
- Demonstrate suitability of advanced neutron absorber materials for use in SNF canister
- Demonstrate and develop NDA technologies (new and existing)
- Develop and demonstrate treatment technologies for specific degraded SNF

Impacts/Benefits

- Eliminate future opening, handling, and repackaging. Help to demonstrate compliance with transportation and disposal requirements. Reduce future costs and risk of repackaging SNF.



Welding development setup at the INEEL for remote seal welding of SNF canisters.

Nuclear Material Stabilization

Problem

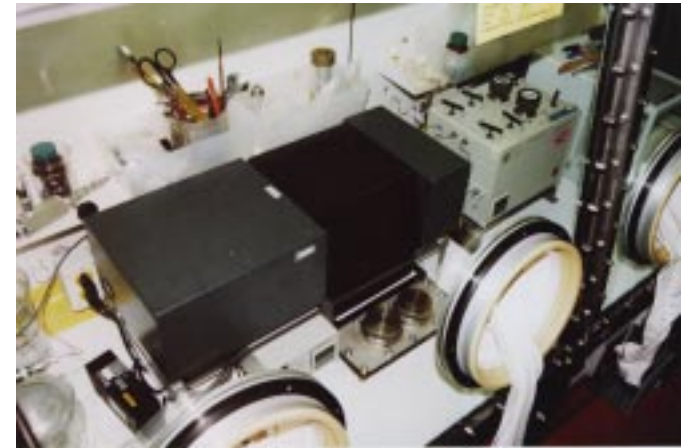
- Nuclear materials must be stabilized to meet existing and future standards prior to packaging for storage and transportation. NDA measurement of nuclear material hold up MC&A is needed prior to initiating D&D.

Solution

- Deploy supercritical fluid extraction (SFE) for moisture measurement prior to canning.
- Initiate deployment of neutron moderation analysis to determine moisture content in bulk impure Pu oxide
- Develop and procure NDA systems to perform material control and accountability (MC&A) measurements on nuclear material holdup.
- Develop technical basis for stabilization of non-Pu materials.

Impacts/Benefits

- Ensure compliance with DOE standards for stabilization, packaging, transportation, and storage of nuclear materials.
- Accelerate site closure schedules and reduce cost of operation.



Supercritical Fluid Extraction (SFE)

Technology Issues in Packaging & Transportation

Problem

- Pu-contamination concerns and changes in uranium material handling procedures have increased repackaging time at **Fernald**, and are jeopardizing site closure milestones. **Other NM sites** have similar problems.
- Shipment of Pu oxide is shut down pending resolution of container failure concerns from pressurization due to radiolytic hydrogen derived from residual moisture. Existing gas generation models overly conservative, jeopardizing site closure milestones and DNFSB commitments at **RFETS**.



Automated Handling of NM

Solution

- Develop and deploy automation systems for handling and repackaging of metallic materials at **Fernald site**.
- Develop technical basis for NM transportation utilizing advanced gas generation modeling
- Evaluate alternative solutions to hydrogen generation for transportation certification.

Impacts/Benefits

- Automation development, deployment work at **Fernald** can be extended to other nuclear materials applications at **multiple DOE sites**, reducing cost, worker exposure, and department liabilities.
- Enable **RFETS, Fernald** to meet closure milestones and satisfy Secretarial commitments to DNFSB.
- Enable transportation certification of 9975 and SAFEKEG transport containers for oxides.
- Remote sensors to monitor the condition of storage containers will reduce vault inspection costs and worker doses at Hanford and SRS.

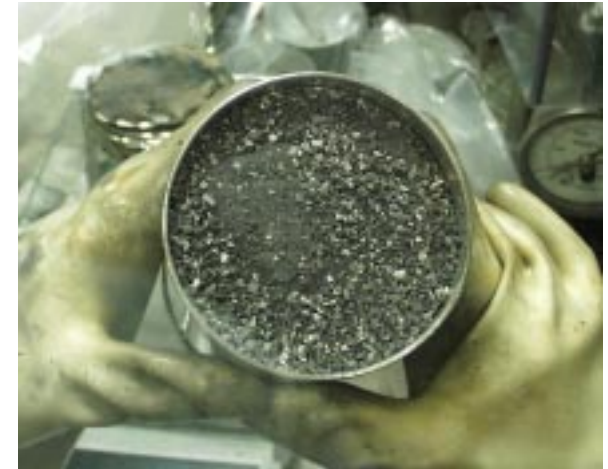
Nuclear Material Processing

Problem

- Legacy materials require pretreatment prior to stabilization for long-term storage or to meet acceptance criteria for disposition as waste. These materials comprise of a variety of physical states, impurities and isotopic compositions.

Solution

- Develop pretreatment processes to make chlorides materials acceptable for stabilization.
- Deploy flow sheet improvements at **SRS** for **Hanford, INEEL, LANL, LLNL, OR and SRS** materials. Initiate work on other materials, e.g., U-233 and Np-237.
- Deploy operational glovebox improvements.



Sand, Slag, and Crucible (RFETS residue)

Impacts/Benefits

- Increase process efficiency and minimize secondary waste streams, resulting in substantial cost savings.
- Meet closure schedules and DNFSB commitments, especially for Pu solutions.
- Establish disposition paths for radioactive sources
- Minimize radiation exposure by improving glovebox operations.
- Criteria and standards for long term storage of non Pu materials will enable consolidation of nuclear materials at long term storage sites

NMFA Technical Assistance

Within the Office of Science and Technology, technical assistance to the sites is now recognized as a key focus area activity. It is important for the sites to document their technology needs to receive this assistance. These include:

- Site nuclear material issues that could benefit from the application NMFA expertise.
 - Opportunities to utilize existing technology to address site materials and problems
 - Opportunities to deploy NMFA technologies to quickly address site issues
- Example: Moisture Measurement Technology Implementation Technical Assistance Panel

NMFA FY01 Major Accomplishments

- Vacuum Transfer (Fernald)
- Gubka Demonstration (Fernald)
- Pu Canister Monitoring System Developed (Richland)
- High Integrity Canister System Developed (INEEL)
- Drum Handling System Initiated (Fernald)
- Furnace Load-out System Initiated (Richland)
- Prompt Gamma Initiated (RFETS)

NMFA Accomplishment Stabilization

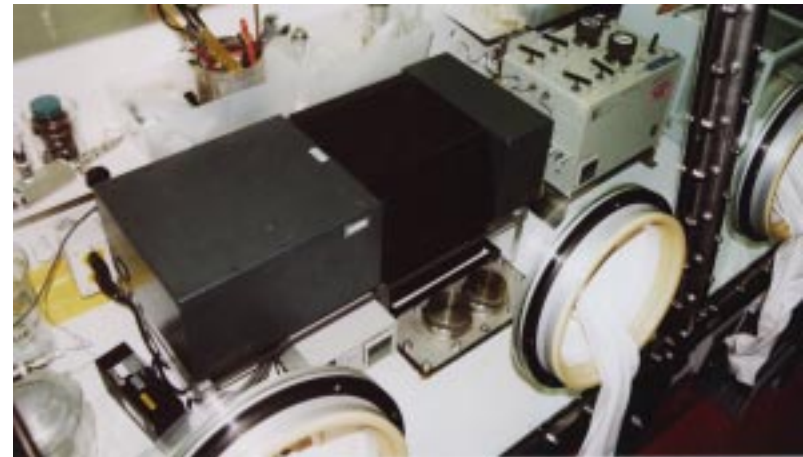
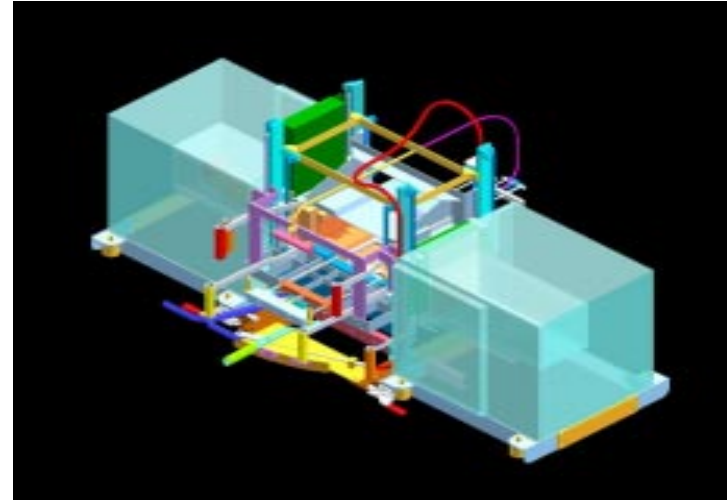
FY01 Accomplishments

- Furnace Load-Out System Initiated
- Supercritical Fluid Extraction (SFE) Deployed

FY02 Planned Accomplishments

- Deploy moisture measurement technologies at Hanford, SRS, and RFETS
- Deploy Pu Thermal Treatment Furnace Load-Out System at Hanford
- Deploy SFE at RFETS

Pu Furnace Load-Out System at Hanford



NMFA Accomplishment

Packaging, Transportation & Storage

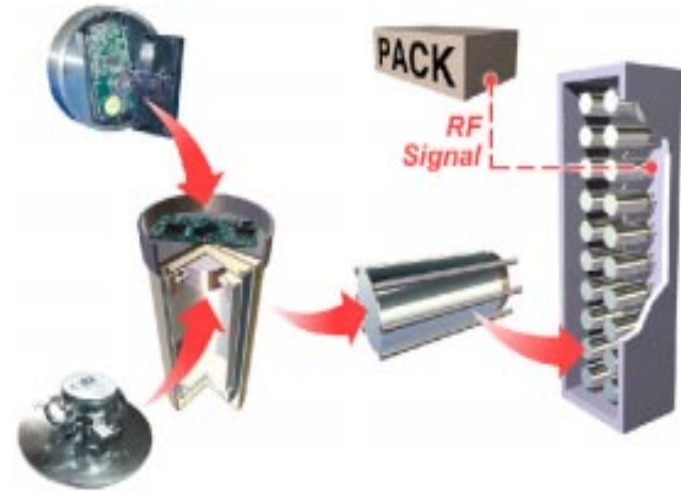
FY01 Accomplishment

- Pu Canister Monitoring System Developed (Richland)
- Vacuum Transfer System (Fernald)

FY02 Planned Accomplishments

- Deploy Surveillance System for 3013 Containers, at Hanford PFP
- Demonstrate instrumented puncturing and venting system for manual drum operations at Fernald (automation enhancement)
- Demonstrate automated lid opening system for drum operations at Fernald
- Deploy integrated process and data control system, linked with Fernald Site-Wide Waste Information Forecasting and Tracking System

Surveillance system for 3013 Pu containers, stored in vault, w/ remote-reading pressure sensor



Vacuum Transfer System at Fernald

NMFA Accomplishments

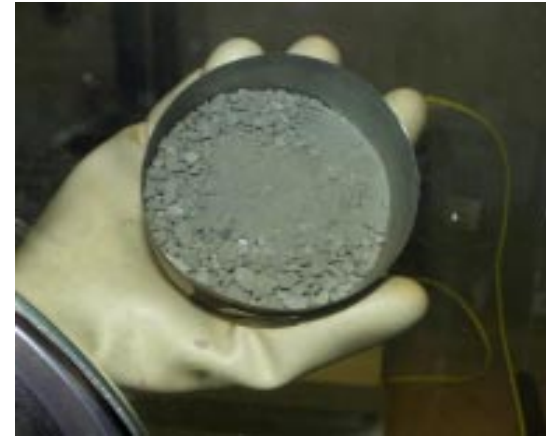
Material Processing

FY01 Accomplishments

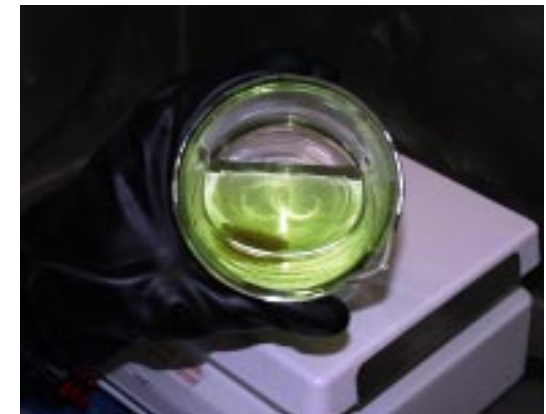
- Demonstrated Gubka at Fernald

FY02 Planned Accomplishments

- Complete testing phase for high temperature distillation process for plutonium oxides containing chlorides
- Demonstrate stabilization of single and double pass oxalate filtrate solution at Hanford
- Complete modeling of potassium tetrafluoroborate (KBF_4) system
- Maintain Russian collaboration



Material to be Dissolved



**Solution with Unacceptable
Precipitation**

NMFA Accomplishments

Spent Nuclear Fuel

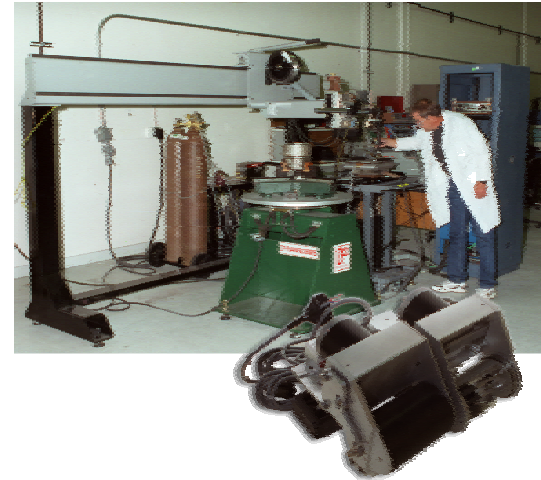
FY01 Accomplishments

- Developed high integrity canister system

FY02 Planned Accomplishments

- Deploy High Integrity Canister
- Complete selection of preferred canister welding technology for final evaluation
- Initiate long-term study of materials interaction in repository environment
- Support accelerated Hanford K-Basin fuel drying
- Initiate development of drying standard for spent nuclear fuel
- Transfer evaluation of insoluble neutron absorbers from National Spent Nuclear Fuel Program

SNF Canister Welding Development



High Integrity Canisters



Example: Gubka Demonstration at Fernald

- The Fernald site identified a 25 liter inventory of radiological liquid standards with no disposition path.
- The NMFA scheduled a demonstration of the Gubka technology at the Fernald site to stabilize the liquid standards for disposition.
- The demonstration of the technology at the Fernald site will be completed by the end of September.
- At the end of the demonstration, all Fernald solutions will be stabilized.



NMFA Roadmapping

- The NMFA is currently involved in a Roadmapping effort focused on nuclear material disposition pathways across the complex.
- Every NMFA technology and science need will be associated with the appropriate material streams at each site during workshops this year.
- Programmatic milestones and timelines will be developed and summarized by disposition pathways at each site.
- These timelines will facilitate the roll-up of Complex-wide programmatic drivers and assist in the prioritization of NMFA scope.

Workshop Goals

- Open lines of communication between NMFA and Small sites
- Identify technology requirements at small sites
- Identify technology requirements at small sites which are similar to or the same as large sites
- Identify nuclear material issues that could benefit from the application of NMFA expertise.
- Identify opportunities to utilize existing technology to address site materials and issues
- Identify opportunities to deploy NMFA technologies that quickly address site issues



Nonactinide Isotopes and Sealed Sources Management Group

*James O. Low
DOE Albuquerque Operations Office*

*September 11-12, 2001
Small Sites Materials Issues Support Workshop
Las Vegas, Nevada*



NISSMG

Nuclear Materials Scope of Work

- **Excess materials at DOE sites/facilities**
- **Excess DOE loan/lease (non-licensed) materials at universities and industry**
- **All unencapsulated radioactive isotopes with $Z < 90$ (nonactinide)**
 - standards/ research materials (Liquid Technical Standards, high purity isotopes, unique isotopes)
 - special categories - RTGs, pacemakers, neutron sources, orphan isotopes and activated materials at small sites
- **All sealed sources, including actinides**



NISSMG

Mission

- **The NISSMG enhances effective management of NISS materials and orphans in the DOE complex by:**
 - providing technical assistance to closure sites, closure facilities at operating sites, and small sites
 - providing a mechanism for use, reuse and recycle
 - sharing knowledge and lessons learned

Vision

- **To have a small core team supported by a larger virtual organization that provides technical and regulatory assistance for management and operational organizations for NISS materials within the DOE Complex**



NISSMG cont'd

- **One of five EM Nuclear Materials Management Groups**
 - Pu (Plutonium)
 - U (Uranium)
 - HI (Heavy Isotopes)
 - SNF (Spent Nuclear Fuel)
 - NISS (Nonactinide Isotopes and Sealed Sources)
- **Integral component of the Nuclear Materials Stewardship Program**
- **Endorsed by DOE's Integrated Nuclear Materials Management Plan, Task 6 in order to “serve corporate nuclear materials management needs.”**



NISSMG

Direct Technical Site Support

- **RFETS** - Disposition Planning, Bulk Characterization, Reuse
- **Ashtabula** - Material Management & Disposition Planning
- **PNNL** - Material Management & Disposition Planning, CFX Reactor
- **LLNL** - Material Management & De-inventory of Facility
- **Pantex** - Transportation Technical Support
- **Brookhaven** - Interim Storage Options
- **INEEL** - Be-Reflector, DU Shielding



NISSMG

Direct Technical Site Support

- **Albany, Ore.** - Disposition Planning
- **Battelle Columbus** - Pu Disposal
- **K-25/ETTP** - HFIR Internals, RTG's
- **ORNL** - Be-reflectors
- **Mound** - De-inventory
- **Fernald** - Material Management & Disposition Planning & GUPKA Demo
- **LANL** - C-14



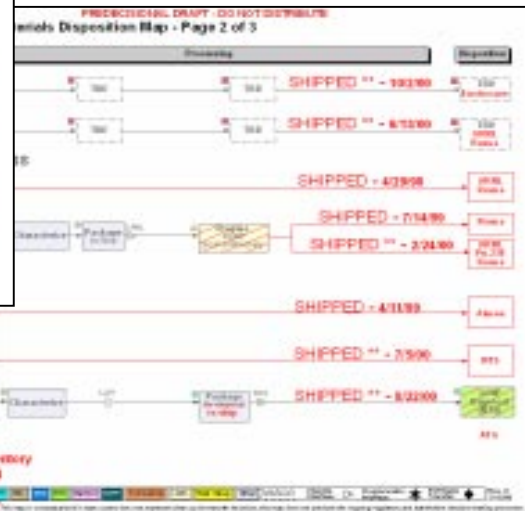
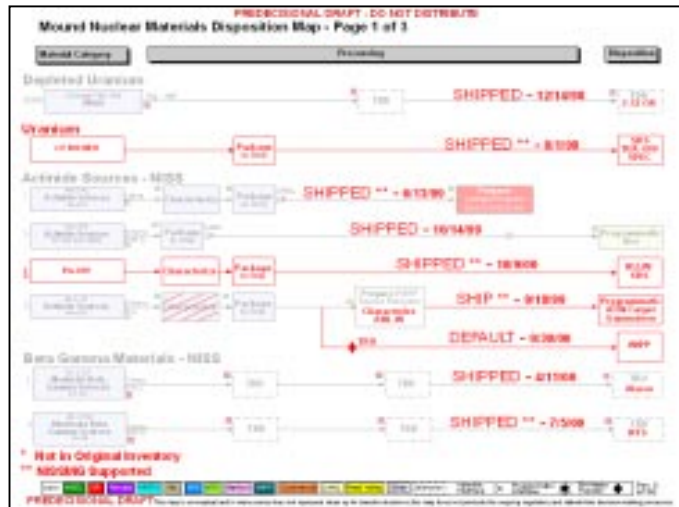
Closure Site Support - Mound

- Started April 1998 on an as requested basis
- Developed a material management plan in which ORNL separated protactinium, a unique isotope, from Mound Ionium
- Facilitated demonstration (no-cost) mobile material characterization - Mound CFX Reactor cadmium moderator blades
- Defined and brokered a material management strategy that enabled ORNL to reuse Pu-238 from problematic neutron sources
- Developed the technical basis to permit the shipment of the last major nuclear materials from the Mound site, facilitating site closure





Mound Material Disposition Maps



NISSMG supported
9 of 22 material streams
at Mound (40%).

At the Mound Plant, all nuclear materials have been dispositioned,
reducing the mortgage costs in security, safeguards, and personnel.



Closure Site Support - Fernald

- Support requested to develop baseline alternatives for NISS materials - June 2000
- Supplied *Fernald Sealed Source Disposition Plan* - September 2000
- Eight material streams developed
- Two orphan (non-sealed sources) material streams have TBD processes, due to site's lack of processing capability
- Pursuing more cost-effective options for Ra-226 disposal
- Gubka technology demo being used to stabilize 25 liters of radiological liquid standards that had no disposition path (joint with NMFA)





NISSMG

Small Sites Services

- **We enhance effective small sites nuclear materials management by:**
 - Providing technical support to sites for NISS materials issues
 - Developing/maintaining “toolbox” of NISS material management options
 - Conducting trade studies on crosscutting issues to fill “toolbox” to assist sites
 - Liquid Technical Standards
 - Neutron Sources
 - Special Performance Assessment Required materials
 - Cs/Sr
 - Be Reflectors
 - Liaison with complex-wide experts and resources to resolve specific NISS materials issues



NISSMG

Small Sites Services - cont'd

- Ensuring effective communications to HQ, other management groups, sites, and the R&D (NMFA) community
- Providing technical and regulatory assistance to ensure effective implementation of recommended solutions



NISSMG

Small Sites Services

- **We enhance complex-wide communications with:**
 - Annual reports
 - Web page - <http://emi-web.inel.gov/Nissmg/index.htm>
 - Charter and Organization
 - Services and Documents
 - Contact information
 - Material Management Plan
 - Other reports



NISSMG

Small Sites Services

- **NISS Data Integration**
 - Virtual Source Bank - WEB based tool to facilitate reuse by making excess DOE sealed source information available to potential users
 - Centralized NISS Database - Enable sites to enter and maintain overall source data.
 - Complex Wide Issue Identification – Use centralized database to identify crosscutting issues for the DOE complex



NISSMG

Small Sites Services

- **Material Management & Disposition Planning**
 - Develop baseline alternatives
 - Develop Disposition Plan with identified disposition paths, characterization, processing, packaging, end state
 - Identify unique materials and reuse opportunities
 - Orphan material and TBD disposition map resolution
 - Receiver site identification and coordination



NISSMG

Small Sites Services

- **Material Management & Disposition Technical Assistance**
 - Transportation technical support
 - WAC and disposal technical assistance
 - Disposal site use / access requirements, providing lessons learned
- **Analyzing, optimizing and implementing cost effective alternatives including commercial vendors for specific NISS materials issues.**



Conclusion

Complex-Wide Resources Solving Site Specific Problems

How can we help you?

Jim Low (DOE/AL) (505) 845-5458 jlow@doeal.gov

Gary Polansky (Sandia) (505) 845-7029 gfpolan@sandia.gov

Dave Parks (INEEL) (208) 526-0486 dlp@inel.gov

Jeff Allender (SRS) (803) 725-4187 jeff.allender@srs.gov

<http://emi-web.inel.gov/Nissmg/index.htm>



Waste Elimination Team

Greg Hulet

TRU and Mixed Waste Focus Area



Summary

- Why a Waste Elimination Team (WET)?
- Team Description
- Funding
- FY2001 Projects
- FY2002 Projects
- Out-Year Plans



Technical Assistance

- Mature technologies awaiting deployment
 - Mercury
 - Stabilization
- Regulatory assistance helps with interpretation of regulations
 - MOU with EPA
 - Determination of equivalent treatment
 - PCB rule information



Deployment Difficulties

- Need process gives impetus for research
- Technology is developed and demonstrated
- Commercial treatment facilities won't deploy without guaranteed waste streams
- Sites do not want to go through permitting process for small quantities of waste



Deployment Solutions

- Deploy technologies through combined treatment campaigns
- Convince private sector of market
- Reduce costs through economies of scale
- Share experience to help with permitting and onsite deployments (ASTD)



Waste Elimination Team (WET)

- Site waste management personnel
- Principal investigators for deployments
- TMFA regulatory personnel
- TMFA technical personnel



WET Responsibilities

- Supply information on deployment NEEDS
- Supply data for treatment campaigns
- Prepare and ship waste
- Fund treatment of site's waste
- Provide NEEDS/priorities for out-year deployments



Elemental Mercury

- Small quantities of elemental mercury made deployment expensive
- Economies of scale for combined treatment campaign
- PI has experience working with Broad Spectrum contract
- Mercury will be treated at Allied Technology Group at Hanford (August ?)



Mercury Soil and Sludge

- Combined treatment campaign to eliminate small waste streams of sludge and soil
- PI will create combined profile
- Team will coordinate shipments
- Waste to be treated by M&EC under Broad Spectrum (November ?)



Mercury Schedule

- August 2001 - ATG puts amalgamation process in place
- October 2001 - Elemental mercury shipments to ATG
- November 2001 - M&EC puts mercury stabilization process in place
- January 2002 - Mercury waste shipments to M&EC



Mercury Contact

Lynn Schwendiman

INEEL

(208) 526-0283

YLS@inel.gov



Organic Liquids with Mercury/Pu

- SAMMS will immobilize mercury and actinides
 - Separate from liquid - eliminate liquid
 - Stabilize with SAMMS in matrix - dispose
- Deployment of SAMMS planned for FY2001-FY2002



SAMMS Contact

- Thomas Klasson
- ORNL
- (865) 574-6813
- klassonkt@ornl.gov



Organic Liquids

- NoChar product stabilizes organic liquids
- Chamberlain Group funded to assist sites in deployment
- Discussions with treatment facilities for deployment if there is a market
- Testing to determine long-term properties of stabilized material



Nochar Contact

Dick Govers

Chamberlain Group - Mound

(804) 528-4365

rgovers@chamberlaingroup.net



Uranium Chip Deployment

- Series of technologies deployed to treat reactivities
- Uranium chips selected for FY2001 because of universality
- Contract will be accessible by all sites (BOA)
- Proposals due August 21
- Vendor selection/contact September 2001



Chips Contact

Juan Ferrada

ORNL

(865) 574-4998

ferradajj@ornl.gov



Gas Cylinders

- Vendor will treat gas cylinders at central facility
 - Vendor will inventory cylinders at sites, paid by WET
 - Site will ship cylinders for treatment, paid by site
- Vendor selected/contract September 2001
- WET will coordinate deployment schedule



Gas Cylinders Contact

Mike Morris

ORNL

(865) 574-0559

imi@ornl.gov



Lead Acid Batteries

- TMFA establishing regulatory framework
- WET will support review of macroencapsulation contracts
- Ohio will lead first article test effort
- Information forwarded to WET for accessing the contract/meeting regulations



Battery Contact

Mary Morse

Fernald

(513) 648-6245

mary.morse@fernald.gov



Classified Configuration I

- Testing of Clean Technologies Molten Aluminum process at Sandia
- WET given opportunity to send samples
- Large-scale unit may be deployed at treatment facility if sufficient demand



Classified Configuration II

- Project initiated in FY2002
- Sort and decontaminate classified shapes
- Concentrated TRU stream sent to WIPP
- Metals recycled to shield block
- LLW sent for disposal
- Oak Ridge will direct off-site treatment



Classified II Contact

Mike Morris

ORNL

(865) 574-0559

imi@ornl.gov



Thermal Treatment

- WET will inventory waste requiring thermal treatment during FY2002
- PI will investigate existing contracts for thermal treatment
- PI will place or modify contract if needed
- WET will conduct treatment campaign



Thermal Treatment Contact

Steve Reese

INEEL

(208) 526-0070

reessj@inel.gov



Reactives Phase II

- WET will survey the reactives requiring treatment for the DOE complex
- WET will determine groupings of reactives
- WET will establish contract for treatment of at least one grouping of reactives



Reactives Phase II Contact

Susan Carson

Sandia

(505) 845-8713

sdcarson@sandia.gov



Macroencapsulation

- Lessons learned from Arrowpak macro work at Oak Ridge/Envirocare
- Review of national contracts for macro
- Determine best method for deploying macro technologies
- Macro of debris streams will be investigated by WET in FY2002 if funding is available



Tritium Contaminated Waste

- WET will define the DOE inventory
- WET will investigate options for treatment
- Plans will be laid for out-year treatment or development efforts
- FY2002 funding uncertain



Oversize TRU Boxes

- Joint project - LANL, Nevada, LLNL
- Prepare path for shipment of oversize boxes from NTS and LLNL to LANL
- Waste size-reduced and prepared for WIPP at DVRS in out-years
- Funding uncertain for FY2002



Out-Year Priorities

- TMFA has budgeted \$1.5+ M for out-year deployments
- WET will help prioritize the deployments on which that money will be spent
- ASTD efforts will be investigated to see if additional funding can be accessed



Conclusion

- Combined efforts of sites with similar wastes will expedite deployment of demonstrated technologies and subsequent treatment of legacy waste
- TMFA will provide technical and monetary assistance to make the deployments possible and effective

Off-Site Source Recovery Project



NMFA Small Sites Workshop
September 11, 2001



Off-Site Source Recovery

The OSR Project recovers and manages unwanted radioactive sealed sources and other radioactive material that:

- Present a risk to public health and safety
- Present a potential loss of control by a NRC or agreement state licensee
- Are excess and unwanted and are a DOE responsibility under PL 99-240, or are DOE-owned



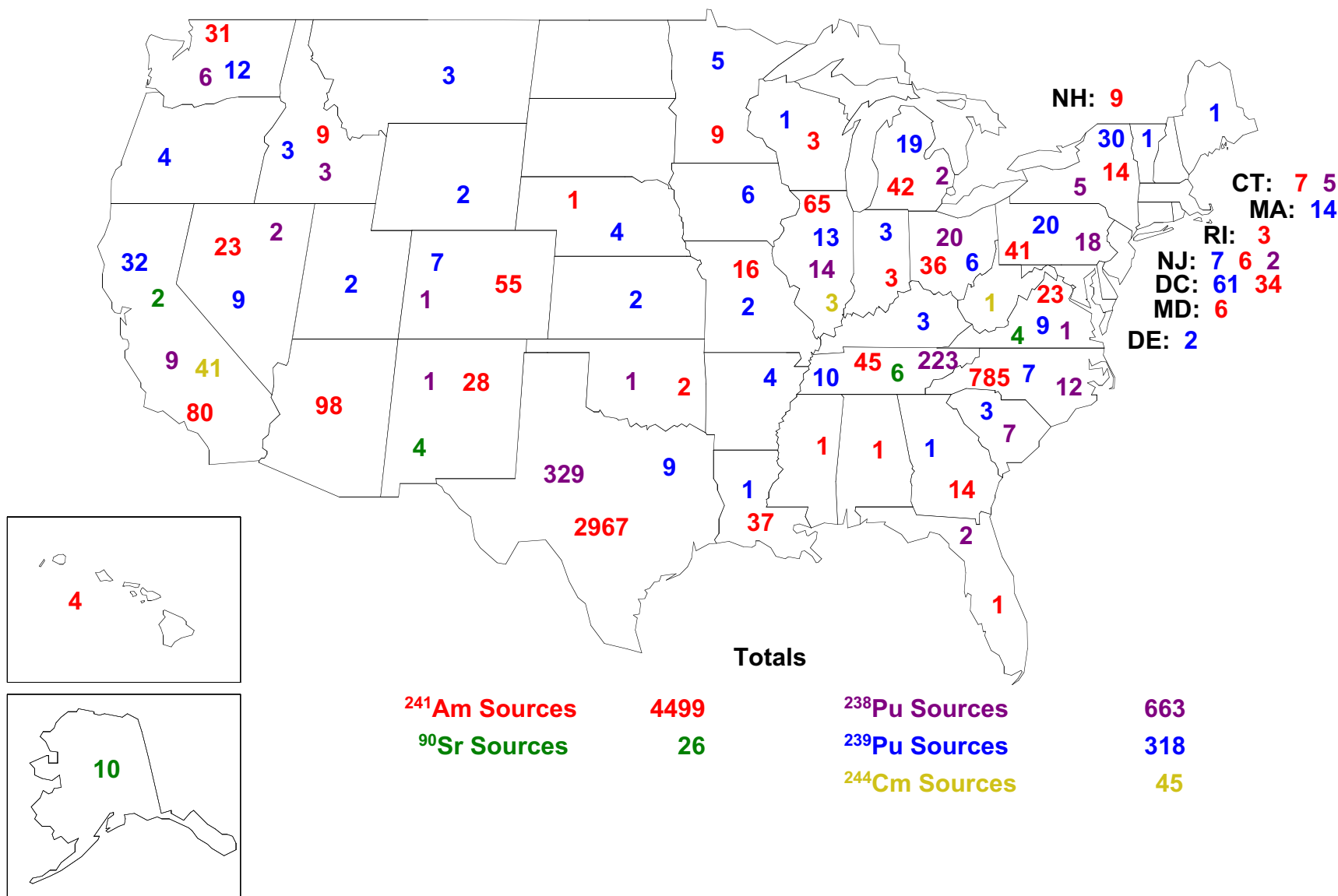
Off-Site Source Recovery

(cont.)

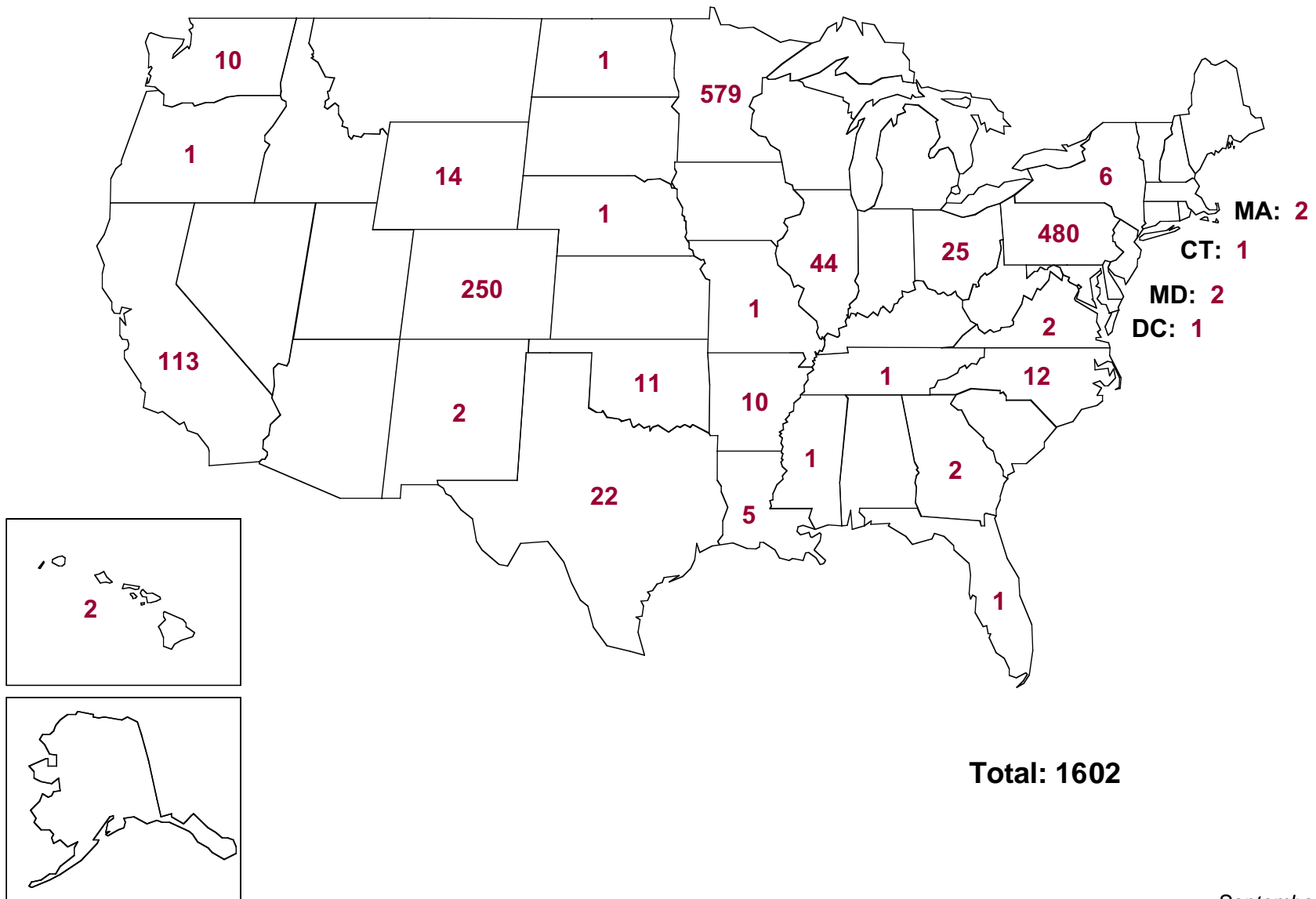
- Sponsored by DOE EM-22 and DOE/AL-WMD
- Operates from LANL
- Focuses on excess sealed sources
 - Recovery
 - Transportation
 - Storage
 - Disposal

Sealed Source Summary by Isotope

Total Excess Sources Listed - September 6, 2001: 5,551



OSR Project Recoveries to Date



September 6, 2001



Recovery/Transportation Capability

- Excess sealed source database
- OSR Project website <http://osrp.lanl.gov>
- Field assistance and recovery operations
- Ability to place sources in special form capsules
- Containers for Type A and Type B shipments
- WIPP approved containers for storage and disposal



LANL Special Form Capsule

DOE Standard 1027-92 provides for removal of sealed sources in special form from the nuclear inventory



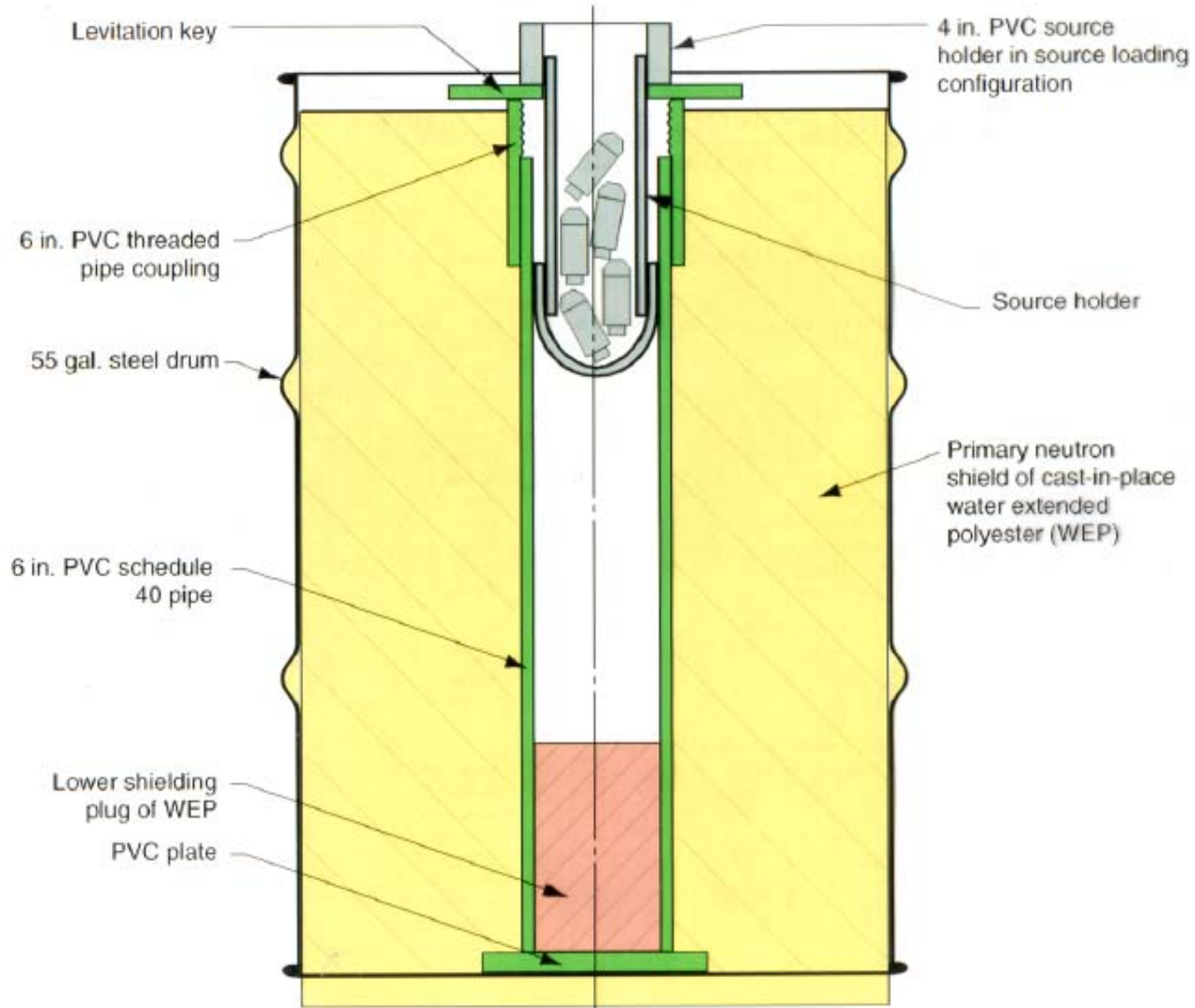


LANL Special Form Capsule

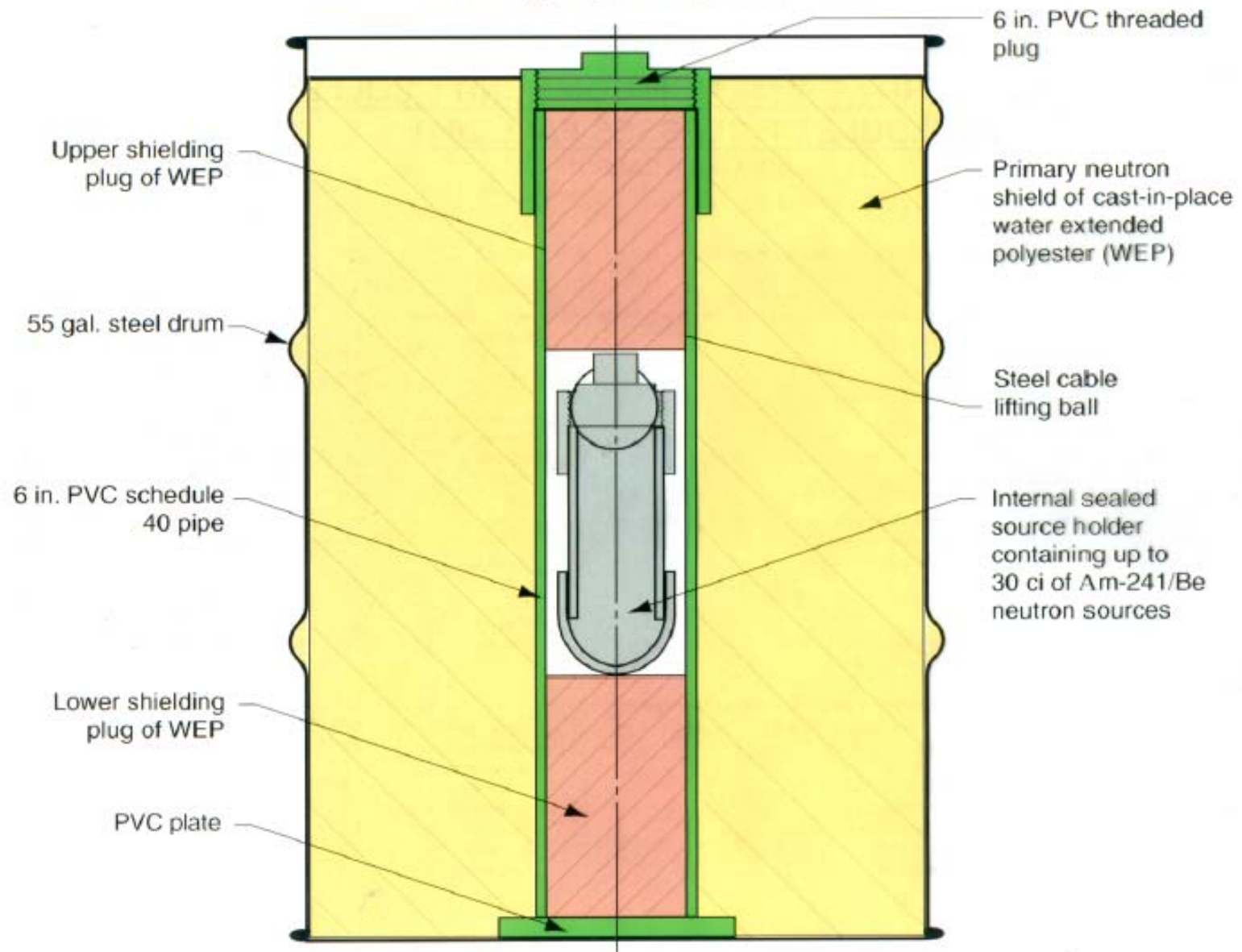
Field assembly kit for LANL SFC includes all accessories required to safely encapsulate sources to US DOT Special Form (49 CFR 173.469)



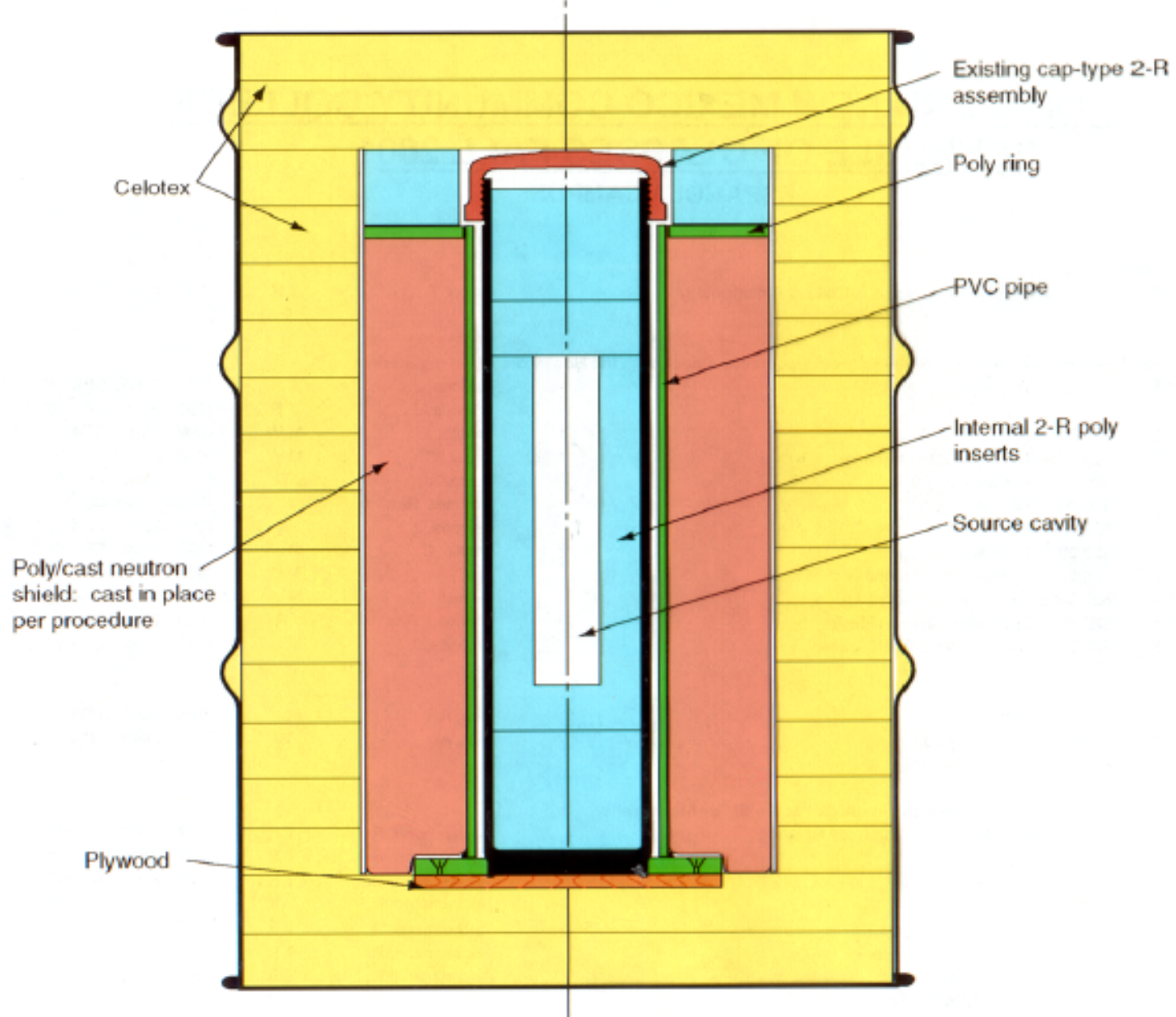
Loading Position
Commercial DOT-Type-A Shielded Neutron Source
Interim Shipping/Storage Container



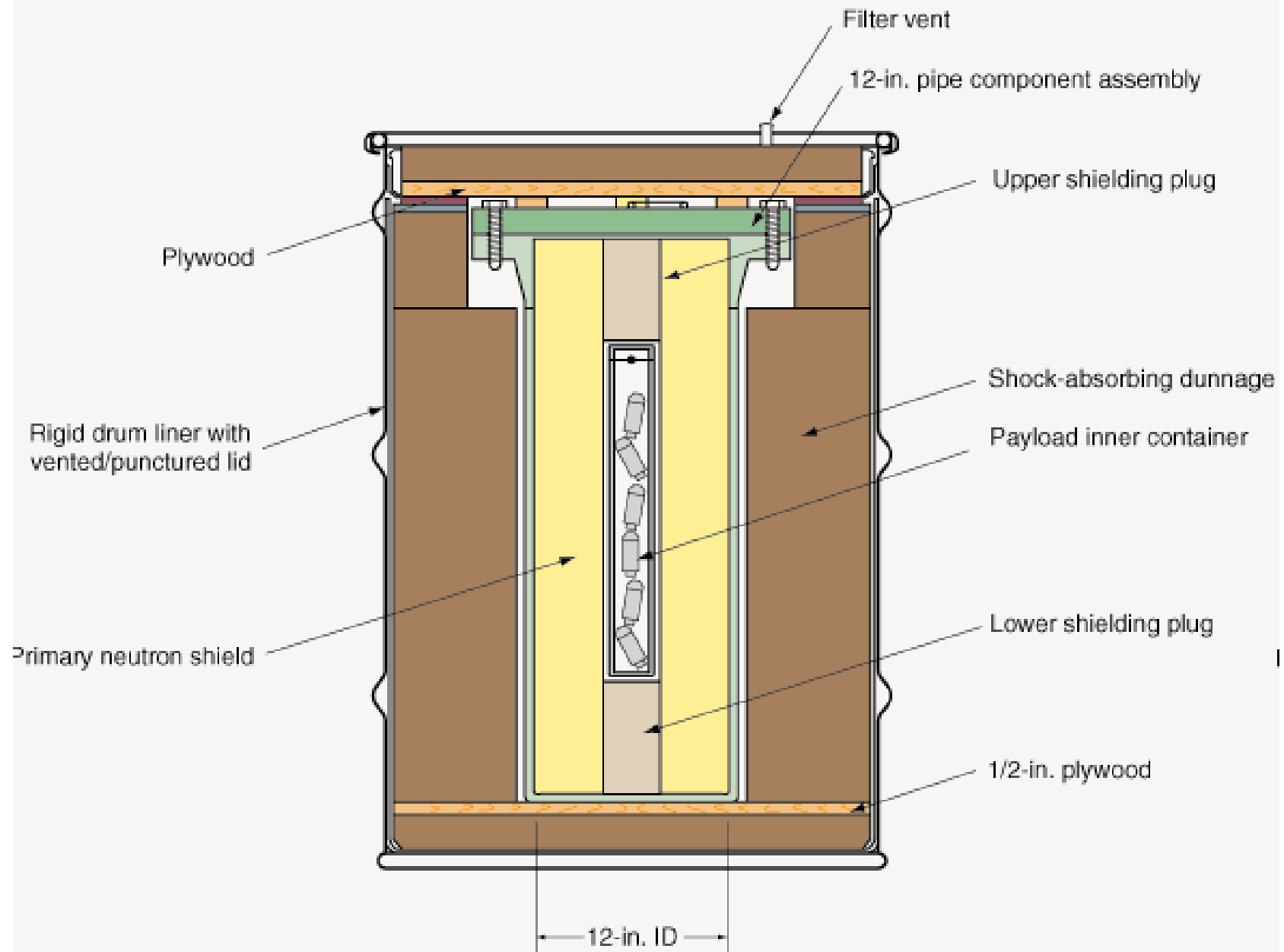
Commercial DOT-Type-A Shielded Neutron Source Interim Shipping/Storage Container



**A prototype neutron-shielded US DOT 6-M
Shipping Container Built and Tested at LANL**

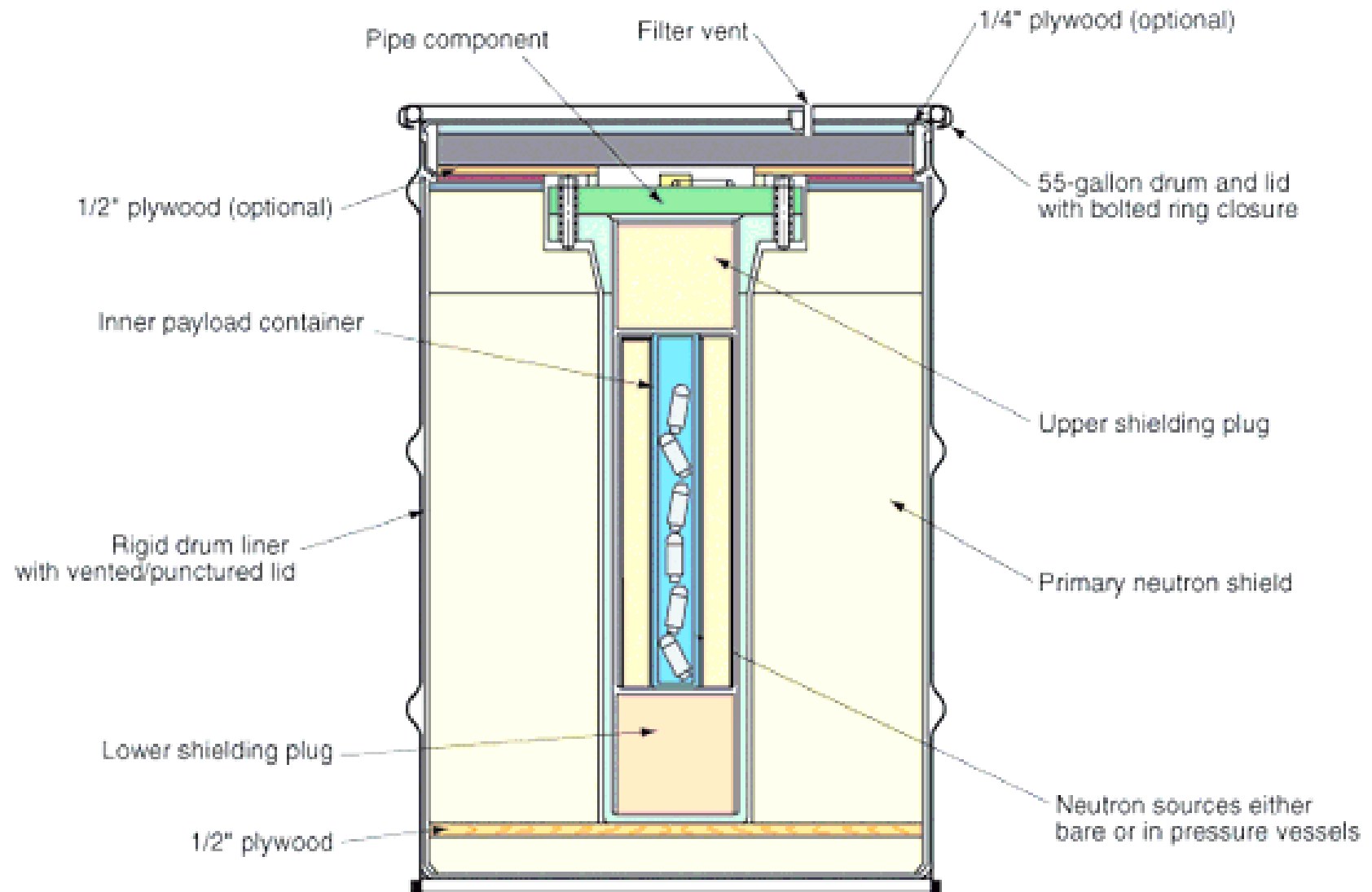


WIPP Approved 12" Pipe Component Overpack Assembly Configured for Disposal of Neutron Sealed Sources



The Proposed Multifunction Container (US DOT Type-A)

Designed* specifically to handle consolidated shipment, storage, and eventual disposal of neutron sources.





Pipe Overpack Component Assembly



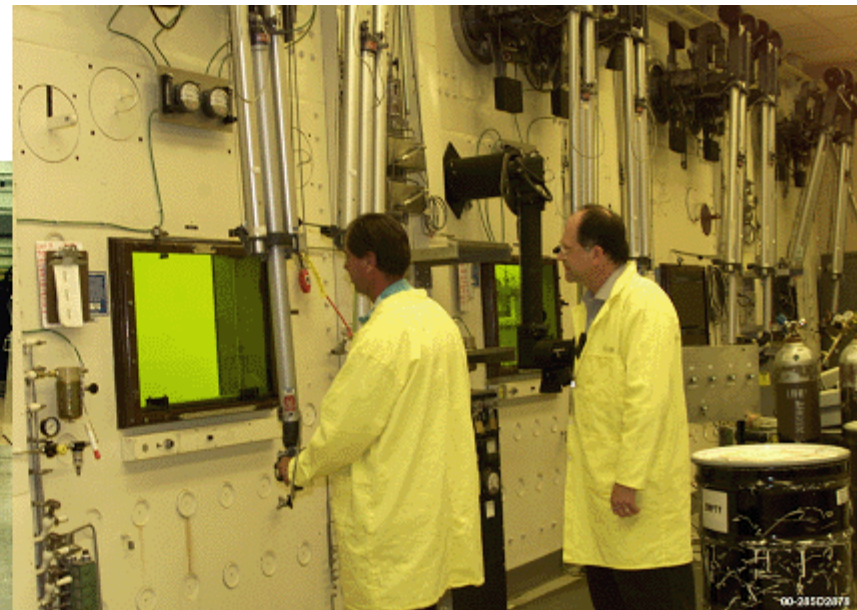
US DOT/WIPP-approved multifunction container available for transportation, storage, and disposal.

Manufactured by Westinghouse Engineered Products Division in Carlsbad, NM.



Storage in CMR Floor Holes

Hot cell and floor hole storage
for high activity sources





Storage at LANL TA-54 Area G

Sources awaiting disposal are placed in TRU waste storage domes.





Defense Sealed Sources - Disposal at WIPP

Under the LANL Transuranic Waste Certification/ Characterization Program (TWCP), the OSR Project has the only WIPP approved sealed source waste stream in the DOE complex.



The DOE Field Office in Carlsbad has asked the OSR Project to assist small sites with their sealed source waste stream problems.

LANL-01-275D4221



WIPP Acceptance Criteria for DOE-Owned Sealed Sources

- Sources must have documented defense pedigree that complies with OSR Project Acceptable Knowledge Document
- Sources are packaged in accordance with OSR Project Visual Examination Procedure
- Packaged sources meet WIPP NDA and headspace gas requirements
- LANL TWCP certifies the waste packages
- DOE-Carlsbad provides final approval for shipment of OSR Project sealed source waste stream



What can we do for you today?

On a Work-For-Others reimbursable basis, OSRP can:

- provide assistance with historical documentation of sealed sources
- place damaged or undocumented sources in DOT special form
- package actinide bearing sources in a WIPP compliant configuration at your site for storage
- accept Am-241 and Pu-238 bearing sealed sources <10 Ci, with a defense pedigree. Non-defense sources will be considered on a case-by-case basis
- Provide specialty services in sealed source analysis, packaging, and transportation at your site



What can we do for you in FY02?

- When production of the S-100 container begins, on a Reimbursable Basis, the OSR Project can accept Am-241 and Pu-238 bearing sealed sources $>10 < 30$ Ci with a defense pedigree. Non-defense sources will be considered on a case-by-case basis.
- When approval of termination of safeguards is received from NNSA/DOE-SO, the OSR Project can accept Pu-239 bearing sealed sources with a defense pedigree. Non-defense sources will be considered on a case-by-case basis.

<http://osrp.lanl.gov>

Off-Site Source Recovery Project



"a solution for the 21st century"

Home	<
Operations	<
Research	<
Facilities	<
Off-Site Waste	<
Online Source Registration	<
Contacts	<
Documents	<
Useful links	<

What is Off-Site Source Recovery?

The Off-Site Source Recovery (OSR) Project recovers and manages unwanted radioactive sealed sources and other radioactive material that:

- present a risk to public health and safety,
- present a potential loss of control by a Nuclear Regulatory Commission (NRC) or agreement state licensee.
- are excess and unwanted and are a U.S. Department of Energy (DOE) responsibility under Public Law 99-240, or are DOE-owned.

The project is sponsored by DOE's Office of Technical Program Integration (EM-22) and the Albuquerque Operations Office Waste Management Division and operates from Los Alamos National Laboratory (LANL). It focuses on the problem of sources and devices held under US Nuclear Regulatory Commission or agreement state licenses for which there is no disposal option. The project was reorganized in 1999 to more aggressively recover and manage the estimated 18,000 sealed source devices that will become excess and unwanted over the next decade. This reorganization combined three activities, the Radioactive Source Recovery Program, the Off-Site Waste Program, and the Pu-239/Be Neutron Source Project. For a copy of the OSR Project fact sheet



What's required?

- Register sources and provide detailed information on OSR Project Database
- Obtain approval from DOE-AL
- Contact OSR Project Office to develop recovery plan and integrated work order
- Procure necessary containers



Next Steps.....

- Contact DOE-AL (Joel Grimm 505/845-5463)
- Contact OSR Project Office (Shelby Leonard 505/667-6701)
 - OSR Project will determine technical and logistical requirements
 - OSR Project will develop preliminary cost estimate for customer
- Contact LANL (Susan Martinez 505/667-0264) to initiate Integrated Work Order to facilitate transfer of funds
- Contact Frank Montoya (505/665-5468) for questions regarding cost estimate and/or funds transfer
- Contact Westinghouse Engineered Products Division (Stephen Nance 505/234-5641) to order containers

Classified TRU Sanitization

HEU Cleaning

Nuclear Materials Focus Area Small Sites

Materials Issues Support Workshop

Dr. Michael S. Blau

September 11-12, 2001

Lawrence Livermore National Laboratory

Work performed under the auspices of the U.S. Department of Energy by
Lawrence Livermore National Laboratory under Contract W-7405-Eng-48

Lawrence Livermore National Laboratory, P.O. Box 808, Livermore, CA 94551



Classified TRU and Pu-Contaminated HEU

No Paths

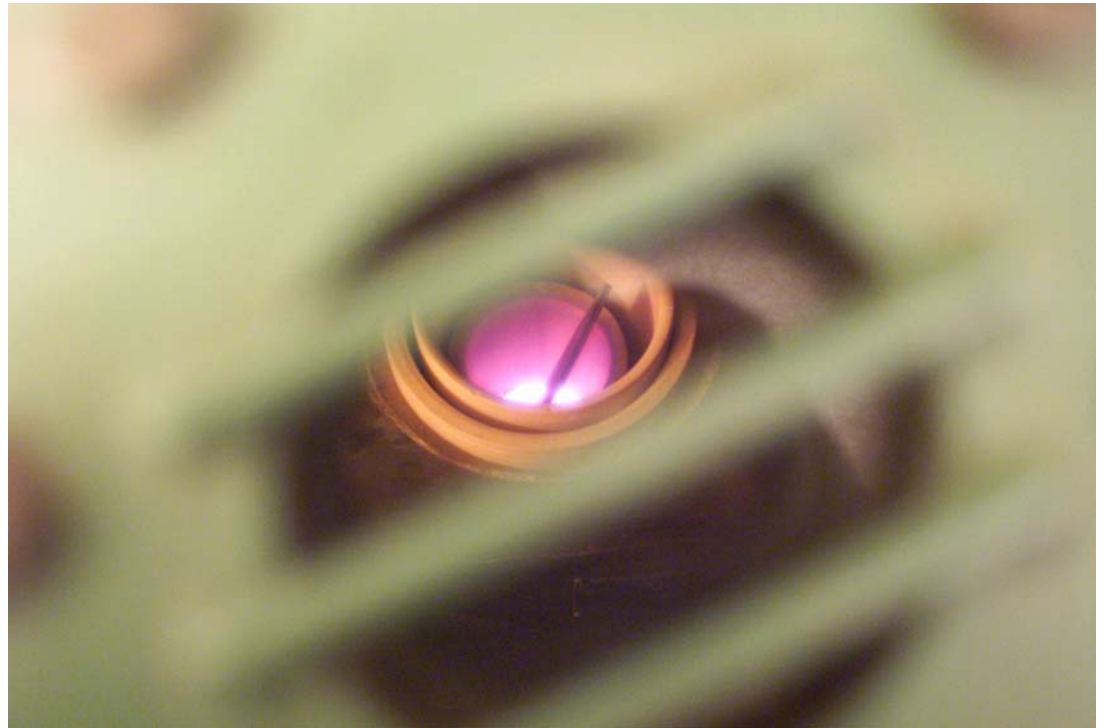
- Major Problem for large and small Sites
 - except for Rocky Flats
- “Classified TRU” is any **unwanted** classified items that have an activity of more than 100 nCi per gram
- Pu-contaminated HEU is uranium that either swipes greater the 20 dpm alpha per 100 cm² or has a Pu bulk concentration greater than 210 parts per billion (Y-12 acceptance criteria)
- LLNL is in final stages of starting a process that solves the classified TRU problem at LLNL, for current generation only
- LLNL is currently developing a process to clean contaminated HEU
 - \$300K from NNSA (DP and MD) for FY01, \$? FY02
 - \$150K from NMFA (\$200K was promised), \$0 FY02

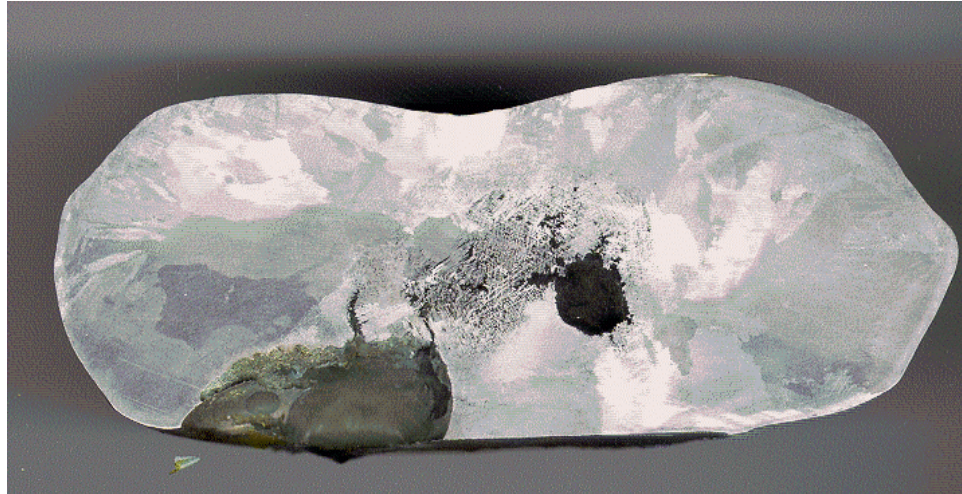
WIPP as a Path for Classified TRU

- WIPP is Licensed to permanently **dispose** of TRU **waste**
- **Classified TRU is not waste**
 - Military Munitions Rule (40 CFR 260.10) requires sanitization of classified parts before they can be **declared waste**
 - DOE Property Rule (41 CFR 109-43.307-51) requires excess DOE property to be sanitized prior to **any disposition** action
- Rocky Flats Path
 - Judge declared many items at Rocky Flats waste
 - Including drums of classified TRU

LLNL Sanitization Process

- Induction melting in ceramic crucibles
- Ceramic crucible with melt packaged in Drum for WIPP

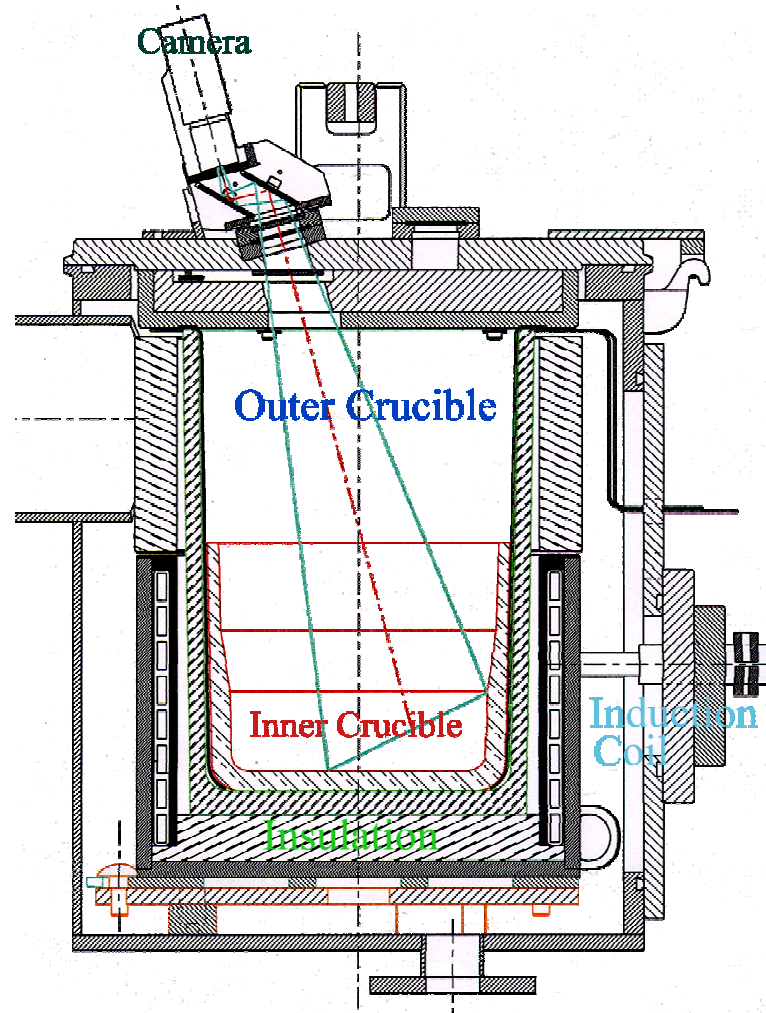




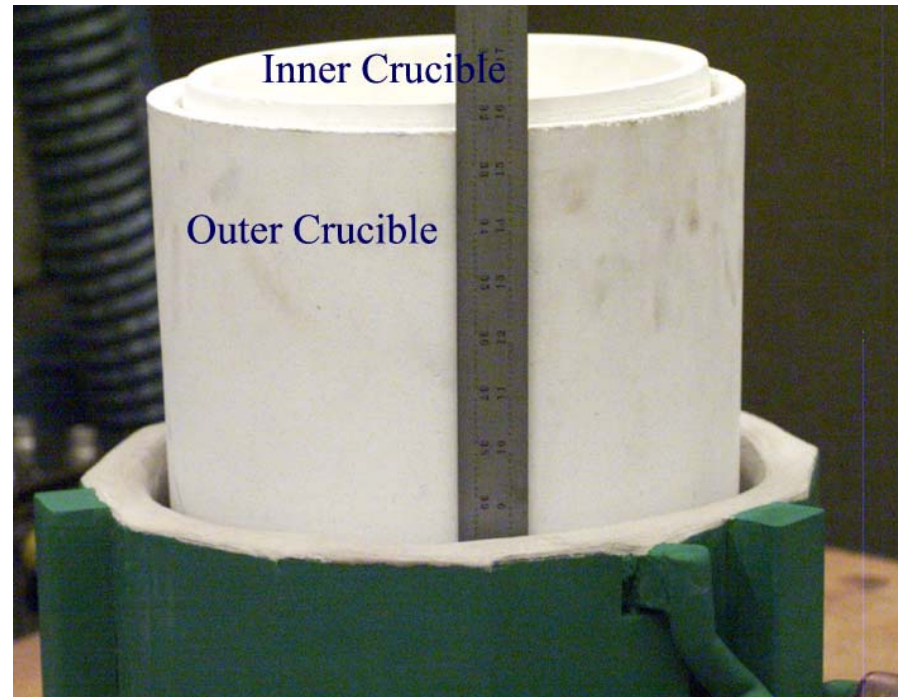
Tantalum with stainless steel (M. P. 3020 C)



Titanium with stainless steel



Modified tilt-pour furnace



Potted 6-turn induction coil with tall low-density inner ceramic crucible and standard outer crucible

LLNL Sanitization Process

Path Forward

- **Finish hot testing in Plutonium Facility**
- **Sanitize classified TRU parts produced by:**
 - Rocky Flats Pits Project at LLNL
 - Mound parts
 - 89 Classified Parts Project
 - Special Item Project
 - Other current LLNL projects
- **Perform sanitization demonstration**
 - LLNL inventory (not funded)
 - Parts from small sites
- **Guidance for small sites**

Plutonium-Contaminated HEU

- **No current path for plutonium-contaminated HEU**
 - **LLNL HEU limit will stop future weapon work**
- **Unallocated Off-Spec HEU Recommendation for Disposition Report**
 - **Possible path years in the future**
 - Many issues to solve
- **LLNL is developing a CO₂ cleaning system**
 - **Contaminated matrix is cleaned by impact of frozen CO₂ pellets**
- **Rocky Flats Path**
 - **Ship to SRS**
 - If the South Carolina Governor does not stop the shipments

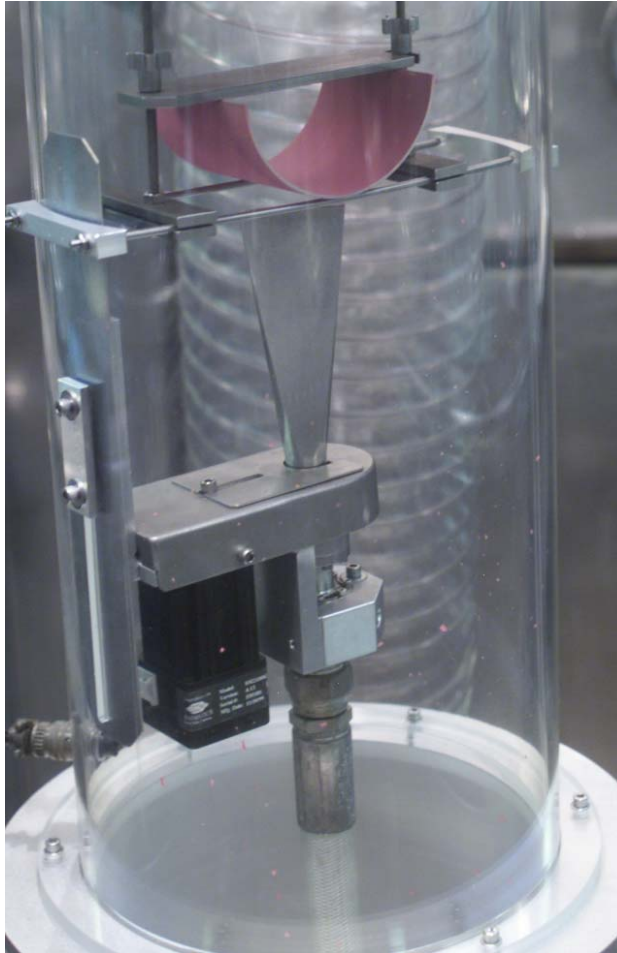
Theory of CO₂ Cleaning



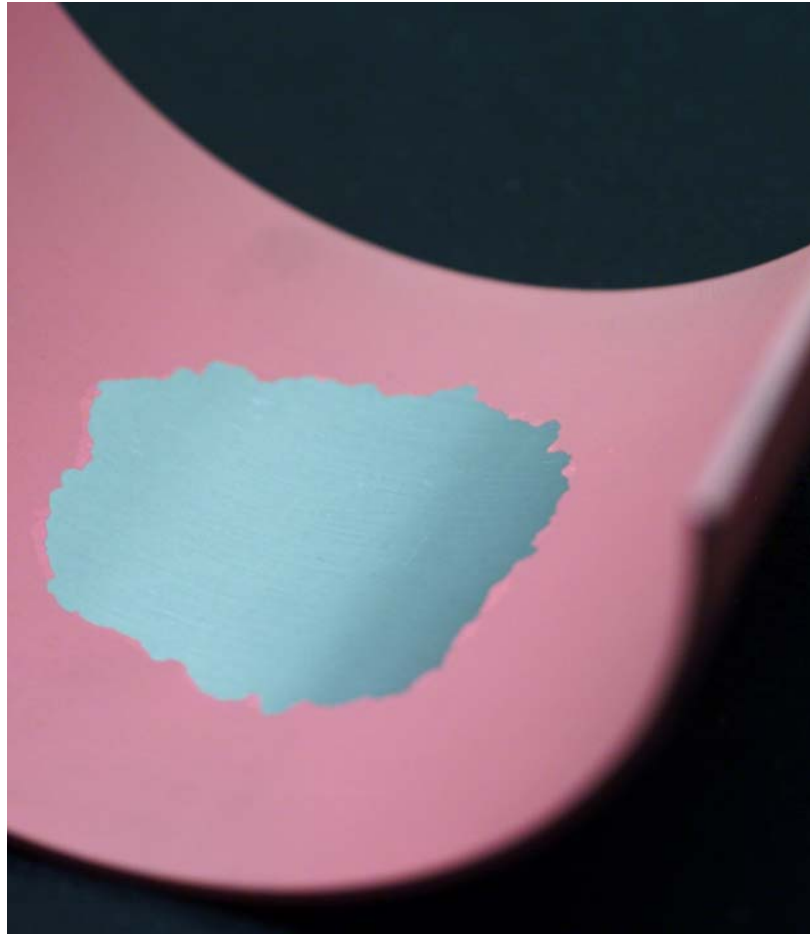
- CO₂ cleaning is non-conductive, non-toxic, and non-abrasive
- CO₂ pellets exit blast nozzle at Mach 1.2
- Impact of the CO₂ pellets loosens the bond between the contaminant and the substrate
- CO₂ pellets shatter and sublime into a gaseous state
 - Large volume increase (800 times)
 - Expanding CO₂ gas form a layer between the contaminant and the substrate that acts like a spatula and peels off the contaminant
- Cooling of the contaminant assists in breaking its bond with the substrate
- The dry ice does not pulverize the contaminant (or the substrate)
- The gaseous CO₂ leaves only the removed contaminant as waste
 - No secondary waste is produced



Test fixture in glovebox with front door opened



Test fixture ready for cleaning painted aluminum parts



Painted aluminum part after 15 seconds at 45 psi

LLNL Results



- **CO₂ cleaning removed paint from aluminum parts without abrading the aluminum matrix**
- **CO₂ cleaning removed oxide from depleted uranium parts without abrading the uranium matrix**
- **Uranium swipes show no chamber contamination!**
- **Increasing the blast pressure increases the abrasive effect of CO₂ cleaning**
- **Guidance for interested small sites**



Nuclear Materials

Small Sites Materials Issues Support Workshop

September 11-12, 2001

STEVEN HAMP



The National Transportation Program is a DOE corporate transportation resource which provides support services for the accomplishment of DOE program missions.



NATIONAL TRANSPORTATION PROGRAM (NTP) MISSION:

To provide policy, guidance, and a transportation infrastructure to ensure the availability of safe, compliant, and efficient transport of DOE materials, with the exception of non-commercial classified shipments of national security interest.



NTP Management Team

- EM-24, Office of Transportation
 - Policy, Budget Advocate, & HQ Liaison
- Albuquerque Operations Office, NTP-A
 - Transportation Services & Operations
- Idaho Operations Office, National Programs Division
 - Systems Engineering

www.ntp.doe.gov



Types of Services

NTP provides tools and services to enable the achievement of critical DOE program goals.

- Shipment Planning
- Transportation Operations
- Packaging Technology Services



Shipment Planning

- Long-Range Shipment Forecast
- Campaign Specific Transportation Planning
 - Guidance
 - Route Selection
 - Cost Estimating
 - Stakeholder Involvement
 - Transportation Information
 - Risk Assessment



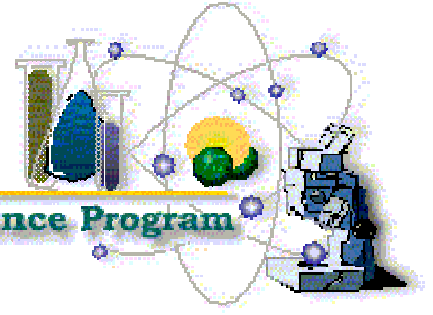
Transportation Operations

- Safety Oversight and Trends
- Compliance Training
- Regulatory Analysis
- Automated Transportation Management System
- Shipment Tracking and Communications
- Transportation Logistics



Packaging Technology Services

- Packaging Management
 - Packaging Inventory & Maintenance
 - Procurement & Quality Assurance
 - Determine Priorities for Package Certification
- Packaging Design Concepts
- Package Testing and Analysis
- Present Technical Positions to Regulators



Environmental Management Science Program

***Research Needs:
Identifying Areas of
Opportunity for the
Environmental
Management Science
Program to Assist Sites***



EMSP Mission

- ó Establish, manage, and direct a targeted long-term research agenda for EM problems so that transformational or breakthrough approaches will lead to significantly reduced long-term clean-up costs and risks to workers and the public**
- ó Bridge the gap between broad, fundamental research such as that performed in DOE's Office of Science (SC) and needs-driven applied technology development which has been historically supported by Environmental Management; and**
- ó Focus the nation's science infrastructure on critical environmental problems**



Considerations for Research Needs Identification

- ó **The goal of EMSP targeted basic research is to provide a basis for addressing problematic clean up issues facing DOE five to ten years in the future.**
- ó **Research should target “areas of opportunity” where, even if a path forward has been established, there is an opportunity to reduce risks, costs, or schedule.**
- ó **Research needs identified by the sites are used as a basis for developing future EMSP solicitations.**
- ó **Successful research is transitioned to focus areas for further development and eventual deployment.**

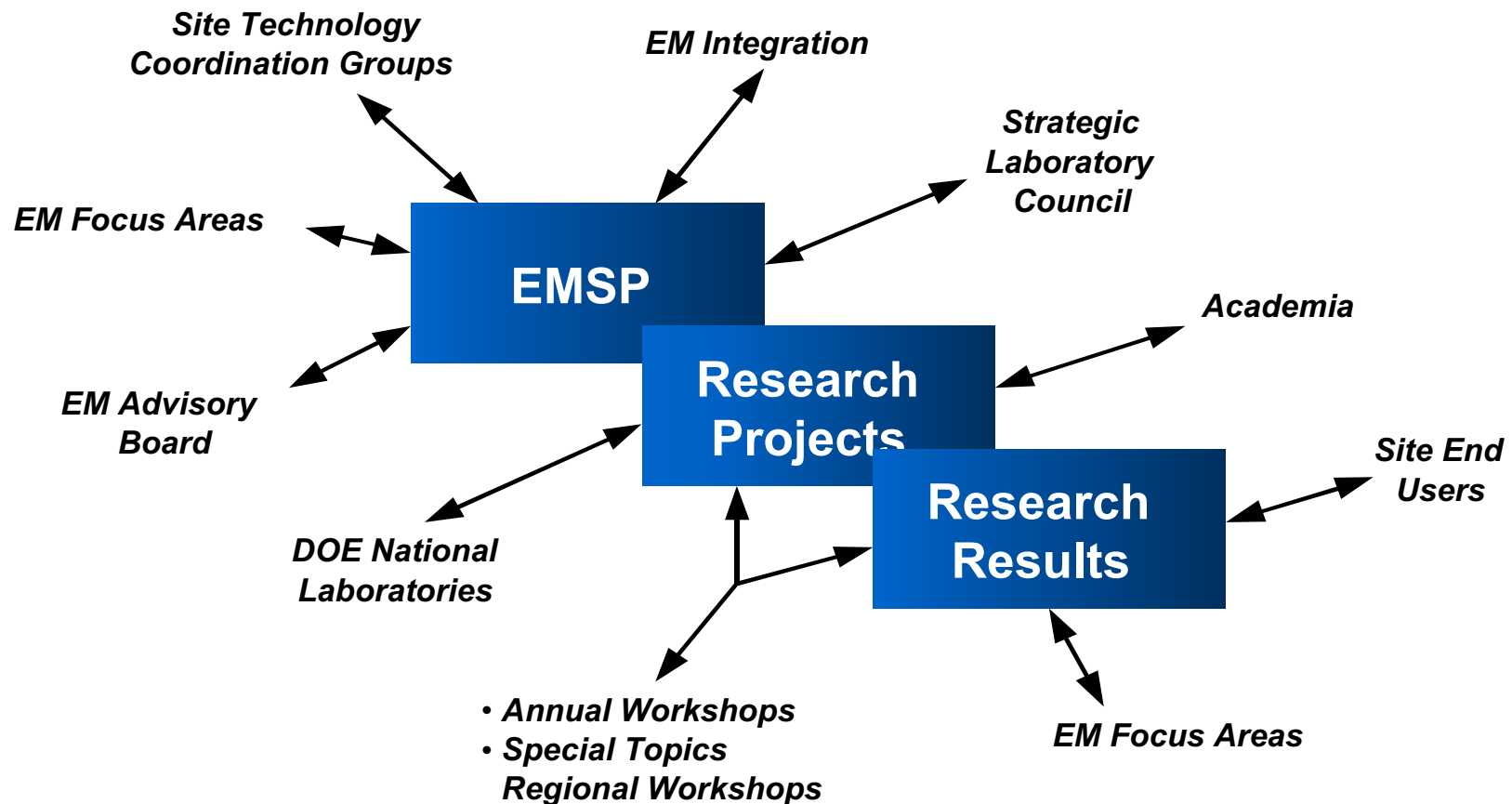


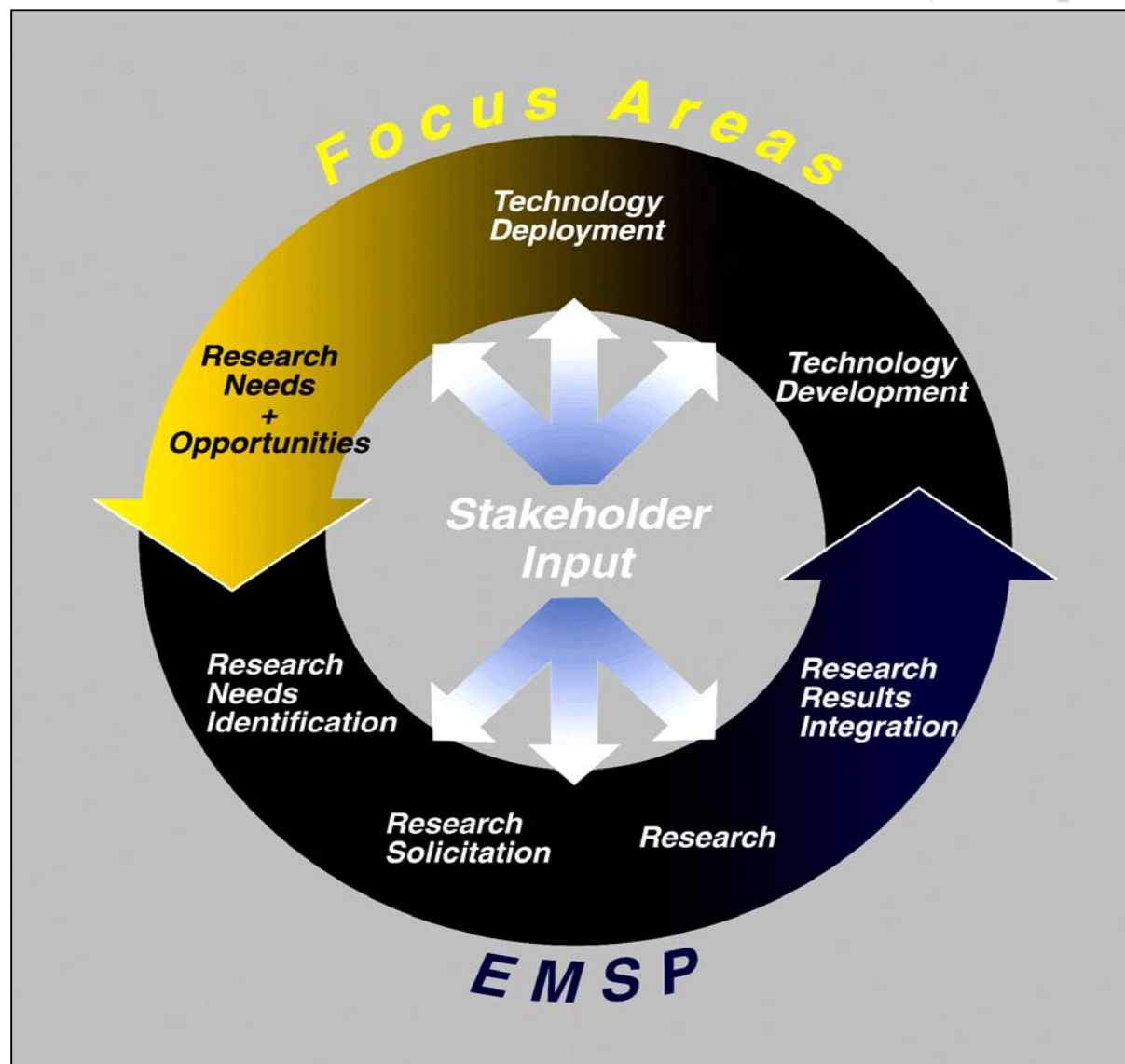
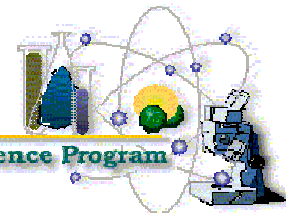
Objectives of Research Integration

- ó **Ensure that EM-specific research needs and opportunities are clearly identified and communicated to EMSP researchers.**
- ó **Ensure that applicable research results are transferred from the EMSP to the appropriate stakeholder, such as a Focus Area, for technical maturation, with the goal of supporting technical development and deployment.**
- ó **The next two slides graphically depict the stakeholders involved in Research Integration and how the EMSP's needs driven products are used by the Focus Areas.**



Interaction of the EMSP with Stakeholders: Needs through Results







Final Thoughts

- ó **The EMSP utilizes Site Technology Coordinating Groups as a basis for research needs identification**
- ó **The EMSP research needs collection and assessment process is integrated into the EM planning process (i. e. Paths to Closure, IDMS, NMS, etc.)**
- ó **EMSP staff are available to assist with identifying areas of opportunity for research needs identification.**
- ó **The relevancy of EMSP research depends upon the sites and focus areas.**

This Service Provider was unable to attend the workshop, however an overview of their services was submitted for review by the Sites in attendance.

Office of Isotopes for Medicine and Science

Owen Lowe
owen.lowe@hq.doe.gov

The Office of Isotopes for Medicine and Science were unable to attend the workshop, following is a description of the services they offer:

The Office of Isotopes for Medicine and Science routinely sell stable and radioactive isotopes worldwide for research and commercial applications. They operate as a revolving fund. Thus, revenues generated from sales are credited to a dedicated treasury account that is available immediately for program use.

When they work with other DOE organizations, they pay for services and products from the revolving fund, then revenue from sales replenishes what they have drawn. Thus, other organizations can benefit directly by interacting with them on a work-for-others basis, whereas if they sell products themselves, proceeds go to a general treasury account and are not available to the selling organization.

They sell everything from light gases to transuranics and have worked with most major DOE sites to move products. They have extensive contacts in the isotope market and can generally provide a quick assessment as to whether a surplus product can be sold.

Please contact Mr. John Carty at (301) 903-1649, John.Carty@HQ.DOE.GOV, to explore collaborative sales or surplus isotope products.